ONTARIO POWER GENERATION

Darlington NGS

Heavy Water Management Building

Estimate Report

January 9, 2012

Prepared for
Ontario Power Generation

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FAITHFUL GOULD
CONSTRUCTIVE EXPERTISE

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Synopsis

Faithful+Gould has been commissioned by Ontario Power Generation (OPG) under PO 00187402 Release 021 dated 22 November 2011 to provide estimating services for OPG Scope of Work 16-31555 D2O Storage Facility External Cost Estimate Preparation, for the Darlington Nuclear Generating Station.

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Project ID: F+G Estimate Number: 100025545							
REV	**DESCRIPTION**	**ORIGINATOR**	**REVIEWER**	**F+G APPROVAL**	**DATE**	**CLIENT APPROVAL**	**DATE**
1	Initial submission to client	CJ	KN	TG	1/9/2012		

DNGS Heavy Water Management Facility
External Cost Estimate

Estimate Report

1 Executive Summary

This Estimate Report is in support of Darlington D_2O Heavy Water Management and Drum Handling Project for partial release and full release BCS and is based on the design information provided by OPG, which is detailed in Appendix A.

The original brief for the estimate was to produce an estimate to an accuracy level in compliance of AACE Class 3 based on the information provided. The methods we have employed to develop the estimate are consistent with those of a Class 3 estimate, being a detailed line-item level build-up. However the information available to derive rates and quantities is not consistent with the information required to develop a Class 3 estimate and has required a number of assumptions regarding to be made regarding design and specification. This is particularly true for the building structure, which accounts for approximately half of total construction cost.

Based on this assessment and on our understanding of the AACE Classification system we believe this estimate should be classified as Class 4 (see Appendix H). In order for this estimate to be classified as Class 3 we would require further information in addition to that currently available, such as specification and data sheets, general equipment arrangement drawings, civil drawings and structural drawings.

This report and associated estimate describes the estimate Business Case Summary release funding to complete the following scopes:

Partial BCS Release:

- Issue contract with a design agency for completion of scope definition, modification planning, detailed design
- OPG to start procurement of long lead items
- Construction/installation/commissioning planning
- Issue RFP for construction/installation of new facility, and select preferred vendor
- Preparation for full BCS release

Full BCS Release:

The partial BCS release will ask for sufficient funding to cover the cost of future activities:-

- Finalise construction/installation/commissioning planning
- OPG to continue procurement of long lead materials
- OPG to procure all other materials
- Issue a contract with a construction company to construct/install the new facility

- Commissioning of new facility and equipment
- Final AFS of new facility
- Design close-out
- Lessons learned report

It has been indicated by OPG that detailed Engineering will not be performed by the Contractor chosen to construct this project and is therefore excluded from the estimate. Interest, escalation and contingency are also excluded.

OPG have also indicated that procurement will be performed by OPG, rather than employing an EPC relationship with the Contractor. The OPG 'oversight' cost includes an allowance for procurement of all construction materials, including long lead and specialist items.

At all times during the establishment of this estimate, F+G were required to use their best efforts to secure independent cost information and this has been achieved with only one exception. Due to time restrictions the exception is that we have utilized the quotations for tanks which were previously provided directly to OPG. Based on our knowledge of the current market we believe these quotations are sufficiently recent to represent a current market value.

2 Estimating Scope of Work

The Project Scope of Work is the DNGS Heavy Water Management Building and to support the project strategy Faithful+Gould (F+G) utilised best practice estimating techniques to develop a release quality estimate for the identified contract strategy.

The F+G independent estimate includes for:-

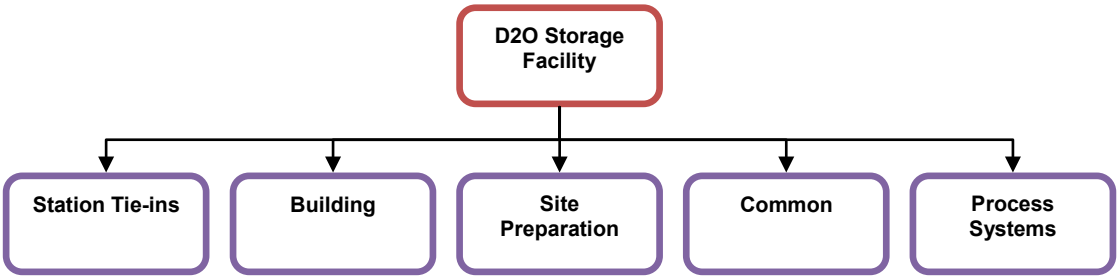
- OPG Costs including project management and supervision oversight, and procurement of all construction materials, including long lead and specialist items
- Construction labour, materials and equipment costs
- Commissioning
- Project close out cost
- EPSCA costs relating to the Principal Agreement between OPG and the Canadian Union of Skilled Workers
- SAVH allowances are included within the rate build-up of the individual craft labour rates
- CMO charges of 1.25% (percentage advised by OPG Project and Modifications) relating to the project cost

Principal Exclusions include interest, escalation, contingency, risk and historic project costs.

3 Estimate Methodology and Basis

3.1 Project Breakdown Structure (PBS)

The DNGS Heavy Water Management Building estimate has been constructed around the following Project Breakdown Structure (PBS). This structure was provided by OPG and has been used to summarise costs within the estimate:



3.2 Estimating Techniques

3.2.1 General

This project benefited by use of the latest agreed New Rules of Measurement for Order of Cost Estimating and Elemental Cost Planning as issued by the Royal Institution of Chartered Surveyors. This method of measurement ensures consistent assumptions across all building elements and provides structure to the estimate and clarity on the scope of work contained in each element.

In addition to the scope of work provided by OPG meetings were held with relevant OPG stakeholders to clarify and agree the detailed scope of work for the project, and to supplement the formal information provided.

Labour norm hours were established by use of the F+G library of past project experience for activity duration and costs and for expected deliverables. The F+G installation norm library is extensive and continues to grow, and this will be used for future sustainable estimating. Where norm hours were not available or not applicable all-in rates have been used based on industry data and experience from previous projects.

All F+G estimated contractor rates are inclusive of preliminaries to cover the anticipated costs for contractor management and staff, insurance, safety, health, welfare, impact for site agreements, protection of the works, security, small plant and tools, existing site regulations, etc.

3.2.2 Specific Estimating Method

Design reports and drawing information provided by OPG was used to produce detailed quantity and dimension measurement of the building structures and process and equipment layouts where possible. From available dimensions, all identified activity scopes per trade were measured using either imperial dimensions or the equivalent metric value.

The applied rules of building measurement were those established under Royal Institution of Chartered Surveyors New Rules of Measurement, 2010.These quantified measures were then allocated a labour norm from internationally accepted publications. The resultant base hours were then factored using a prepared Productivity Factor aligning to OPG practice and procedure (see Appendix E).

These productivity factor hours were then taken against an anticipated crew strength, taken from F+G knowledge, per category of work, to provide the total cost of each activity.

Costs for materials were realised in the general by utilising F+G data libraries and past experience, and supplemented in certain instances by contacting vendors. Rates for storage tanks were taken from the quotations previously provided to OPG and have been validated as representing current market value.

The structure of the construction works estimate follows a logical construction sequence as follows, and includes references to New Rules of Measurement and PBS to allow costs to be grouped differently if required:

- External works
- Site investigation
- Works to existing structures
- Substructures
- Superstructure

- Staircases
- Windows and external doors
- Internal walls and partitions
- Elevators, lifts and hoists
- Building services
- Miscellaneous metalwork
- Internal fittings, furnishings and equipment
- Process equipment
- Electrical control systems
- Specialist equipment

The estimate to be produced by F+G was intended to be at an AACE Class 3 level of detail. The characteristics of a Class 3 estimate are as follows:

End Usage: Class 3 estimates are typically prepared to support full project funding requests, and become the first of the project phase control estimates against which all actual costs and resources will be monitored for variations to the budget. They are used as the project budget until replaced by more detailed estimates. In many owner organizations, a Class 3 estimate may be the last estimate required and could well form the only basis for cost/schedule control.

Estimating Methods Used: Class 3 estimates usually involve more deterministic estimating methods than the stochastic methods that would be used for Class 4 of Class 5 estimates. They usually involve a high degree of unit cost line items, although these may be at an assembly level of detail rather than individual components. Factoring and other stochastic methods may be used to estimate less-significant areas of the project.

Expected Accuracy Range: Typical accuracy ranges for Class 3 estimates are -10% to -20% on the low side, and +10% to +30% on the high side, depending on the technological complexity of the project, appropriate reference information, and the inclusion of an appropriate contingency determination. Ranges could exceed those shown in unusual circumstances.

In conclusion from the foregoing, F+G believe that the Heavy Water Management Building estimate meets the Scope of Work requirement of +50% -30% and could be classified as overall meeting AACE Class 4 +30% -20% (low).

3.2.3 Stakeholder meetings

An initial meeting was held with OPG on Monday November 14th to introduce the project and discuss requirements. A formal kick-off meeting and site walk-down was then held on Tuesday November 22nd to discuss the scope of the project and to identify the physical location of activities on site.

Further meetings were also held on Tuesday December 20th and Thursday December 23rd with the OPG Project Team and Field Engineering, to obtain further clarification of scope and specification, to discuss progress and to clarify client requirements.

A final was convened on Friday January 6th to present the findings of the estimate and discuss final amendments before issue.

The purpose of the Stakeholder Meetings was to review the assumptions made in the Scope of Works and to verify installation scope parameters. This in turn established the confirmation of the

client requirements for the intended scope of work and/or provided an opportunity to review or revalidate previous assumptions.

3.2.4 Walk-down

The purpose of Heavy Water Management Facility site walk-down held on November 22nd 2011 was to identify and develop physical constraints, topography, site access, security requirements, material delivery and lay-down, constructability of the proposed concept scopes, confirm constraints within the installation areas, radiation protection measures, temporary power supply and service constraints, the route of safe access/egress in construction islands, existing road and ditches, demolition scopes and existing site conditions as access at height, overhead obstructions, etc. Representatives from the Project Team and the TRF attended.

The findings of the walk-down together with the assumptions made provided the F+G estimators with a degree of clarity to the proposed concepts, strategy and construction impact.

4 Estimate Assumptions

4.1 Developmental Current and Full BCS Releases

4.1.1 General

1. Norm hours have been established using F+G libraries of past experience of construction activities and as supplemented by stakeholder meetings.
2. Partial release and full release project management, procurement and close-out scope hours are as established / agreed on the relevant Scope ID Sheets.
3. All construction works are based on a single 10 hour shift, 5 days per week. This is based on a base 40 hour week, therefore an allowance is included for 2 hours overtime per day at the time-and-a-half rate. Labour rates are inclusive all burdens, overheads and profit.
4. No additional allowance has been made for extended weekend or premium time working beyond that identified above.
5. Allowance has been made for construction plant such as scaffolding, lifting platforms, excavators, generators, etc during construction.
6. Appointed Architect/Engineer design vendor will provide all issued final design with an approved Professional Engineers stamp and signature.
7. All construction areas are assumed to be classified as ‘un-zoned’ with the exception of final tie-ins and commissioning works which are Zone 3.
8. No allowance has been made for site security (other than temporary fencing).
9. No special allowance has been made for achieving LEED certification.
10. The estimate does not include costs associated with expediting procurement of long lead items. i.e. it assumes that all required materials are ready for incorporation into the works in accordance with the schedule.
11. Snow removal services are excluded and assumed to be provided by OPG.
12. Maintenance of the facility and decommissioning at end of life is excluded.

4.1.2 External Works and Site Investigation

1. There is assumed to be no asbestos or other hazardous material within the existing temporary office buildings.
2. The number and location of existing service to be removed and relocated are assumed to be as identified on information provided by the Project Team and Field Engineering. No allowance has been made for dealing with unidentified services.
3. Allowance has been made for hand excavation within a 1m width either side of identified existing services, the remained of the bulk excavation is by mechanical excavator.
4. Location and temporary diversion of identified (as advised by Field Engineering) existing underground electrical, telephone, fire hydrant and black water services. Note- permanent reinstallation is not included.
5. Allowance has been made for existing asphalt road surfaces to be removed in the area of the excavation, asphalt and kerbs are to be replaced along the two main roads on completion.
6. An allowance of 3nr portacabins for 24 months has been made to accommodate staff from the existing temporary buildings which are being removed as part of this project.
7. A CAT scan to locate existing buried services has not been included, this is assumed to be carried out by OPG.

4.1.3 Substructure

1. Earthwork support for basement excavations is assumed to be achieved using soldier piles and caisson walls, 450mm diameter concrete filled piles with waterproofing
2. Water table is assumed to be at the 97m level, dewatering has been included utilising two pumps, holding tanks, filter bags, generator set, and a 300m pipe run to dispose arisings to the intake.
3. Bulk excavation has been assumed to 84m level, with 1m being in rock. Rock anchors have been included.
4. Dike walls are assumed to be 1.5m thick.
5. There is assumed to be no interference to substructure construction activities due to inclement or winter weather conditions, although based on the proposed schedule we anticipate the impact to be minimal.
6. The total excavation volume is approximately 15,000m3; 50% of excavated material is assumed to be contaminated. Treatment of contaminated excavated material is excluded. Double handling is included for all excavated material to allow for monitoring in temporary stockpile prior to final disposal.
7. Although the volume of the tanks can be contained within a smaller volume the dike walls are assumed to continue to the 100m level. Dike walls utilise nuclear grade concrete and 150kg/m^3 epoxy coated reinforcement. Foundations for tanks include reinforcement at 120kg/m^3.

4.1.4 Superstructure

1. No allowance has been made for freight or passenger elevators
2. External walls above 100m level are assumed to be insitu concrete to 5m height, with insulated sheet metal cladding above. Concrete columns have been included to support the structural steel columns for the upper structure.

3. 6nr intermediate columns have been included from the 87m level to support the floor above.
4. 18nr columns have been included on the 100m level (center and perimeter) to support the floor above.
5. Slab thickness on the 100m level is assumed to be 400mm to allow sufficient support for loading bay and drum handling activities above. Suspended slab at 107m level is assumed to be 300mm thick.
6. Allowance has been made for the platform of open grid flooring at the 94m level for tank inspection, with 2nr steel spiral staircases for emergency access/egress.
7. Gross floor areas are: Storage area 1010m2; Drum handling 530m2; Cleanup and down graded tanks 100m2; Offices 250m2; Electrical room 250m2; HVAC room 350m2.
8. Perimeter walls to offices are assumed to be concrete filled blockwork, with acoustic drywalls within, and acoustic ceilings.
9. Concrete pavers have been included at roof level for access to HVAC units, with hand-railings at roof perimeter.
10. A two-coat epoxy floor finish is included to storage, HVAC, electrical, drum handling and cleanup areas.
11. Wall finishes in storage area are assumed to be two-coat epoxy coated, no allowance has been made for any additional specialist material for containment of D2O.
12. Floor finishes are assumed to be: Office area, carpet tiles; Washrooms, ceramic tiles.
13. The existing loading bay has been demolished and a temporary loading bay included complete with dock leveller and rolling shutters.
14. Concrete grade for all concrete works is assumed to be M35mpa.
15. A lightning arrester has been included for the main structure.

4.1.5 Building services

1. The new building includes fire detection and alarm capability as well as public announcement.
2. New offices have been provided with a dedicated HVAC system, other areas on a common system.
3. All required services to the new building and temporary site accommodation are assumed to be available for tie-in within 10m of the new structures.

4.1.6 Process systems

1. Option B tanks have been assumed, as per the conceptual design report.
2. Tank sizes are 10% greater than the required storage capacity.
3. Process pipework is assumed to be stainless steel.
4. Cathodic protection is included on all tanks.
5. One demineralised water tank of 1000 litre capacity is included as per our discussions.
6. Block heaters are provided to the storage area.
7. 2nr stack monitors have been included at a rate of $275,000 as advised by OPG, ductwork is measured separately.

4.1.7 F+G Independence

1. F+G have produced this estimate in an independent manner and have not made reference to previous estimates produced for or by OPG for this scheme. All pricing has been produced independently from knowledge of the industry and similar projects and using recognised published data, with the exception of the tank quotations which have been provided by OPG.

4.2 Productivity Factor Calculation

Productivity factors are incorporated into the estimate to allow for the conversion of norms and costs from outside the OPG site to be utilised for pricing of works within the site. These factors are based on past experience and a detailed knowledge of OPG working practices. They are heavily influenced by OPG processes and procedures and by Union Agreements. The majority of work on this project has been classified as being carried out within 'unzoned' area, with a smaller amount being within Zone 3.

The resultant productivity factors are 1.70 for unzoned areas (5.87 productive hours from a 10 hour shift), and 2.33 for Zone 3 areas (4.28 productive hours from a 10 hour shift). A detailed build-up of productivity factors is attached in Appendix E.

4.3 Crew Rates

The labour rates utilised within the estimate are based on the latest information from tendered rates received by OPG and are available for individual trades types and qualification levels. These rates have been built up into crews for each particular type of work using our experience of OPG working practices and Union requirements (see Appendix F). The resultant crew rates are applied to each estimate line item, together with the productivity factor and quantity, to arrive at a total labour cost for each activity.

Rates are based on EPSCA schedules and are inclusive of union burdens and main contractor burdens such as CPP, EI and EHT, and are inclusive of

5 Other Estimate Details

5.1 SAVH

All SAVH allowances are included the labour rates.

5.2 CMO

CMO costs are included as allowance of 1.25% on total Project Cost within the F+G submitted overnight estimate.

5.3 Escalation

Escalation is excluded from the F+G submitted overnight estimate.

5.4 Contingency

Escalation is excluded from the F+G submitted overnight estimate. These costs will need to be determined from a robust Risk Management process.

5.5 Interest

Interest is excluded from the F+G submitted overnight estimate. To be determined based on project cash flows from P6 schedule.

5.6 EPSCA

EPSCA costs are included within the labour rates in the F+G submitted overnight estimate.

5.7 Engineering Documents

Engineering costs are excluded from the F+G submitted overnight estimate.

5.8 Request for Instructions

We confirm that we have incorporated the effect of all OPG responses contained within RFIs 1 and 2, including the following specific items:

- RFI 001
  - Item 1: Disposal of excavated material – We confirm that we have included for 50% of excavate material to be disposed as contaminated waste, and 50% as uncontaminated waste.
  - Item 4: Epoxy coated rebar – We confirm that we have incorporated epoxy coated reinforcement within the seismic dike (see estimate line item 133)
- RFI 002
  - Item 18: LEED certification – We confirm that as per verbal instruction we have made no special allowances for achieving LEED certification.

6 Recommendations and Conclusion

6.1 Recommendations

a) All assumptions made should be closely monitored against any revised engineering, design development or site conditions.

b) A Risk Review should be performed to determine the appropriate level of contingency against the assessed probability of success.

c) Several assumptions have been made regarding the design and specification of the substructure and superstructure. These should be reviewed in development of contingency.

d) The estimate assumes that groundwater arising from the dewatering operation can be pumped to the inlet works for disposal. We recommend that this assumption is checked with waste management as there could be a significant cost impact if water needs to be tinkered to an alternative location.

e) The provision of spares is excluded from the estimate. We recommend that a spares list be developed which can be individually priced.

f) The estimate currently assumes that all materials are to be procured by OPG and free issued to the contractor. We would recommend however that OPG procurement be limited to long lead and specialist materials and that the contractor be responsible for procurement of general materials such as concrete, reinforcement, steelwork and cladding. The contractor

should be able to offer this service more cost effectively than OPG and may obtain preferential rates from their suppliers.

g) The estimate assumes that excavation around existing buried services is performed using vacuum excavation. We are aware that there has been difficulty in the past obtaining authorisation from waste management to utilise this technique due to the difficulty in monitoring waste material for contaminations. We recommend authorisation is sought from waste management to utilise this technique, otherwise a more costly and time consuming hand excavation will be required.

h) We have included in the estimate spreadsheet a brief summary of some life cycle costing considerations. These amount to approximately $1.2M at current day prices however we recommend that a more thorough life cycle costing exercise is carried out if these costs are required for project approval. These costs are not included in the total project cost.

i) Approximately half of the total project cost relates to excavation and substructure construction. However if the project were to be constructed above ground there would be a very substantial increase in cost for seismically qualified tanks. If OPG wishes to explore these options then more detailed value engineering exercise should be performed, taking into account construction costs, waste disposal issues and risk.

6.2 Conclusion

a) Estimates were completed for the DNGS Heavy water Management Building as summarized in Executive Summary showing a total estimated cost of $64,600,973.

b) Project scope activities and durations were established from F+ G library of past OPG projects as supplemented by stakeholder meetings. This provides a sustainable basis for Business Case submission.

c) Based on the level of design information available for estimation this estimate has been classified as AACE Class 4. However with a suitable contingency allowance derived from the estimate assumptions it should allow OPG to progress with funding approval. These costs can be further revised alongside with further developed scope and specification.

7 Appendix A – Document Register

7.1 Documents provided by OPG

The following documents were provided by OPG for use in production of this estimate:

Ref	Title
	000 Table of Contents.doc
N-FORM - 11056- R002*	00a Engineering Prejob Briefing.doc
N-FORM - 11056- R002*	00a N-FORM-11056 Eng Pre-Job Brief - Projects.pdf
N-FORM - 10958 R009*	03 N-FORM-10958 Modification Outline.doc
N-FORM - 10853 R002*	04 N-FORM-10853 PSR Determination.doc
N-FORM - 10853 R002*	04 N-FORM-10853 PSR Determination.docx
N-FORM - 10369 R011*	05 N-FORM-10369 CNSC Approvals and Notifications.doc
N-FORM - 10528 R001*	06 N-FORM-10528 Pressure Boundary Designer's Checklist.doc
N-FORM - 10560 R002*	07 N-FORM-10560 Chemistry Design Change Checklist.docx
N-FORM - 10287 R003*	09 N-FORM-10287 Fire Protection Impact Evaluation R01.docx
N-FORM - 10959 R010*	10 N-FORM-10959 Design Scoping Checklist.doc
N-FORM - 10521 R014*	12 N-FORM-10521 Document Scoping Checklist.docx
N-FORM - 10529 R002*	13 N-FORM-10529 Reactor Safety Designer's Checklist.doc
N-FORM - 10580 R005*	14 N-FORM-10580 Identifying Human Factors Level of Activity.doc
N-FORM - 10580 R005*	14 N-FORM-10580 Identifying Human Factors Level of Activity.pdf
N-FORM - 10422 R006*	15 N-FORM-10422 Environmental Impact Worksheet.doc.docx
	BOE.pdf
R00	D2O Storage Building SOW_21NOV11pdf.pdf
	Full Schedule.pdf
	Level 1 Schedule.pdf
N-FORM-10007 R016*	N-FORM-10007 (COMS Screen).docx
N-FORM-11109 R000*	N-FORM-11109 Comment and Disposition Sheet for N-FORM-10958 FINAL.docx
N-FORM-11109 R000*	N-FORM-11109 Comment and Disposition Sheet for N-FORM-10958 Part 1.docx
N-FORM-11109 R000*	N-FORM-11109 Comment and Disposition Sheet for N-FORM-10958 Part 2.docx
N-FORM-11109 R000*	N-FORM-11109 Comment and Disposition Sheet for N-FORM-10958 Part 3.docx
N-FORM-11109 R000*	N-FORM-11109 Comment and Disposition Sheet for N-FORM-10958.docx
N-FORM-11109 R000*	N-FORM-11109 Comment and Disposition Sheet.doc
NK 38-DR000-10001	NK38-DR-38000-10001 R000 Preliminary Design Requirements for the

Ref	Title
	Darlington Heavy Water Management Building West Annex Sigend.pdf
NK 38-REP-0971-02650	NK38-REP-09701-0265054 Darlington Refurbishment D2O Facility Evaluation.pdf
NK 38-REP-10002	NK38-REP-38000-10002 Conceptual Design Report for the Heavy Water Management Building West Annex Signed.pdf
NK 38-REP-10000	N-REP-38000-10000 OPG Heavy Water Storage Management and Drum Handling.pdf
K-015634-REP-0001-R00	OPG D2O Storage Facilities Costing-K-015634-REP-0001-R00 - final.pdf
N-PCH-09701-1001	Project Charter N-PCH-09701-10001-R001.pdf
	Scope ID Worksheet_D2O Storage Building_23NOV11.xlsm
NK38-SOW-38000-10003	NK38-SOW-38000-10003 R001.pdf
	SCOP-PROC-TP-002 - Scope Identification Worksheet V 2 1 (Full Implementation) _ Original (2)_29n0v2011.xlsm
2011-005 rep	2011-005 rep DNGS D20 Storage Facility VE Final Report 20110519.pdf
	Additional Activities_09dec2011.xlsx
	Full Schedule.pdf
	Level 1 Schedule.pdf
NK38-DR-38000-10001 R000	NK38-DR-38000-10001 R000 Preliminary Design Requirements for the Darlington Heavy Water Management Building West Annex Sigend.pdf
NK38-REP-09701-0265054	NK38-REP-09701-0265054 D2O Storage Facility Evaluation.pdf
N-REP-38000-10000	N-REP-38000-10000 OPG Heavy Water Storage Management and Drum Handling.pdf
N-PCH-09701-10001-R001	Project Charter N-PCH-09701-10001-R001.pdf
	SCOP-PROC-TP-002 - ScopeID WS - Full V 3 2 (2)_05dec2011.xlsm
	SCOP-PROC-TP-002 - ScopeID WS - Full V 3 2_original_07dec2011.xlsm

8 Appendix B – Cost Summary

DNGS Heavy Water Management Building - Summary

Item	Cost		
OPG Project Management and Engineering Oversight and Procurement	$ 4,352,301	9.5% of DFC	[Benchmark: 5% to 10% DFC]
Project Management (including indirects, site based)	$ 9,120,825	20.0% of DFC	[Benchmark: 15% to 25% of DFC]
Engineering	Excluded		[Benchmark: 15% to 25% of DFC]
Construction Costs	$ 45,604,124		
Commissioning & Close out	$ 4,726,180	8.0% of TIC	[Benchmark: 4% to 8% of TIC]
Spares	Excluded		
Profit	Included		
SAVH	Included		
CMO	$ 797,543		
TOTAL	**$ 64,600,973**		

Construction Cost Summary	Cost	Labour	Materials	Construction Equipment	DFL Hours
EXTERNAL WORKS	$ 574,918	$ 171,253	$ 308,304	$ 95,361	3,216.0 hrs
SITE INVESTIGATION	$ -	$ -	$ -	$ -	-
WORKS TO EXISTING STRUCTURES	$ 33,411	$ 17,116	$ 8,225	$ 8,070	284.7 hrs
SUBSTRUCTURE	$ 11,691,224	$ 4,774,118	$ 2,534,689	$ 4,382,417	117,123.5 hrs
SUPERSTRUCTURE	$ 5,439,089	$ 3,684,953	$ 1,061,322	$ 692,814	93,998.5 hrs
STAIRCASES	$ 124,450	$ 37,335	$ 74,670	$ 12,445	555.2 hrs
WINDOWS AND EXTERNAL DOORS	$ 65,952	$ 19,786	$ 39,571	$ 6,595	327.4 hrs
INTERNAL WALLS AND PARTITIONS	$ 735,260	$ 425,016	$ 197,323	$ 112,921	10,671.0 hrs
ELEVATORS, LIFTS AND HOISTS	$ 28,602	$ 8,581	$ 17,161	$ 2,860	142.0 hrs
BUILDING SERVICES	$ 2,899,011	$ 934,863	$ 1,652,159	$ 311,989	14,937.9 hrs
MISCELLANEOUS METALWORK	$ 364,956	$ 109,487	$ 218,974	$ 36,496	1,628.2 hrs
INTERNAL FITTINGS, FURNISHINGS AND EQUIPMENT	$ 687,844	$ 220,930	$ 398,660	$ 68,255	3,623.3 hrs
PROCESS EQUIPMENT	$ 22,840,586	$ 4,586,536	$ 15,395,039	$ 2,859,011	96,310.4 hrs
ELECTRICAL CONTROL SYSTEMS	$ 104,179	$ 26,210	$ 51,075	$ 26,894	390.9 hrs
SPECIALIST EQUIPMENT	$ 14,643	$ 1,464	$ 11,714	$ 1,464	21.8 hrs
TOTAL	**$ 45,604,124**	**$ 15,017,646**	**$ 21,968,887**	**$ 8,617,592**	**343,230.9 hrs**

Construction Cost Summary by PBS	Cost	Labour	Materials	Construction Equipment	DFL Hours
Bldg 4.1.1.1	$ 338,003	$ 101,401	$ 202,802	$ 33,800	1,515.1 hrs
Bldg 4.1.1.2	$ 41,453	$ 17,072	$ -	$ 24,381	422.7 hrs
Bldg 4.1.1.5	$ 472,501	$ 141,750	$ 283,500	$ 47,250	2,077.4 hrs
Bldg 4.1.1.6	$ 104,179	$ 26,210	$ 51,075	$ 26,894	390.9 hrs
Bldg 4.1.2.1	$ 397,250	$ 119,175	$ 238,350	$ 39,725	1,746.6 hrs
Bldg 4.1.3.1	$ 142,649	$ 90,889	$ 32,405	$ 19,355	2,108.5 hrs
Bldg 4.1.3.2	$ 21,761	$ 6,528	$ 13,057	$ 2,176	95.7 hrs
Bldg 4.1.3.4	$ 54,367	$ 16,310	$ 32,620	$ 5,437	239.0 hrs
Bldg 4.1.3.5-O	$ 16,344	$ 4,903	$ 9,806	$ 1,634	71.9 hrs
Bldg 4.1.3.6-O	$ 63,560	$ 19,068	$ 32,870	$ 11,622	279.5 hrs
Bldg 4.1.3.8-O	$ 6,068	$ 1,820	$ 3,641	$ 607	26.7 hrs
Bldg 4.1.5.1	$ 79,164	$ 17,289	$ -	$ 61,875	428.1 hrs
Bldg 4.1.5.2	$ 250,025	$ 75,008	$ 150,015	$ 25,003	1,099.3 hrs
Bldg 4.1.5.2-O	$ 4,086	$ 1,226	$ 2,452	$ 409	18.0 hrs
Bldg 4.1.5.3-O	$ 54,076	$ 16,223	$ 32,445	$ 5,408	237.8 hrs
Bldg 4.1.6.1	$ 78,202	$ 23,460	$ 46,921	$ 7,820	359.9 hrs
Bldg 4.1.9.1	$ 100,906	$ 30,272	$ 60,544	$ 10,091	443.7 hrs
Bldg 4.2.1.10-O	$ 69,259	$ 20,778	$ 41,555	$ 6,926	304.5 hrs
Bldg 4.2.1.4	$ 15,460	$ 4,922	$ 8,708	$ 1,830	74.1 hrs
Bldg 4.2.10.1	$ 93,967	$ 28,190	$ 56,380	$ 9,397	407.9 hrs
Bldg 4.2.10.2	$ 4,859	$ 2,458	$ -	$ 2,402	62.5 hrs
Bldg 4.2.10.3-O	$ 10,487	$ 3,146	$ 6,292	$ 1,049	45.5 hrs
Bldg 4.2.2.1	$ -	$ -	$ -	$ -	-
Bldg 4.2.2.5	$ 374,550	$ 112,365	$ 224,730	$ 37,455	1,859.4 hrs
Bldg 4.2.2.7-O	$ 41,744	$ 12,523	$ 25,046	$ 4,174	181.2 hrs
Bldg 4.2.4.1	$ 120,000	$ -	$ -	$ 120,000	-
Bldg 4.2.4.3	$ 14,643	$ 1,464	$ 11,714	$ 1,464	21.8 hrs
Bldg 4.2.6.2	$ 24,245	$ 6,784	$ 12,258	$ 5,203	114.2 hrs
Bldg 4.4.1.1	$ 4,703,549	$ 2,807,545	$ 285,449	$ 1,610,555	75,533.6 hrs
Bldg 4.4.1.2	$ 2,677,230	$ 1,561,662	$ 122,317	$ 993,251	42,252.2 hrs
Bldg 4.4.1.3	$ 2,452	$ 735	$ 1,471	$ 245	10.9 hrs
Bldg 4.4.2.2	$ 41,983	$ 26,098	$ 947	$ 14,938	717.1 hrs
Bldg 4.4.2.2-O	$ 43,090	$ 30,786	$ -	$ 12,304	846.0 hrs
Bldg 4.4.3.1	$ 1,316,833	$ 397,007	$ 778,821	$ 141,005	6,022.5 hrs
Bldg 4.4.3.2	$ 34,398	$ 10,319	$ 20,639	$ 3,440	153.5 hrs
Bldg 4.4.3.3	$ 211,776	$ 63,533	$ 127,065	$ 21,178	946.2 hrs
Bldg 4.4.3.3-O	$ 12,461	$ 3,738	$ 7,477	$ 1,246	61.9 hrs
Bldg 4.4.3.4	$ 154,169	$ 46,251	$ 92,501	$ 15,417	684.0 hrs
Bldg 4.4.3.5-O	$ 97,815	$ 29,345	$ 58,689	$ 9,782	457.0 hrs
Bldg 4.4.5.1	$ 409,483	$ 124,581	$ 241,503	$ 43,398	2,159.6 hrs
Bldg 4.4.5.3	$ 43,458	$ 13,037	$ 26,075	$ 4,346	215.7 hrs
Bldg 4.4.6.1	$ 56,436	$ 16,931	$ 33,861	$ 5,644	280.2 hrs

Bldg 4.4.6.13-O	$ 180,041	$ 68,588	$ 93,978	$ 17,474	1,159.6 hrs
Bldg 4.4.6.14	$ -	$ -	$ -	$ -	-
Bldg 4.4.6.14-O	$ 92,006	$ 27,602	$ 55,204	$ 9,201	430.1 hrs
Bldg 4.4.6.15-O	$ 48,022	$ 43,373	$ -	$ 4,649	1,212.7 hrs
Bldg 4.4.6.1-O	$ 6,644	$ 1,993	$ 3,986	$ 664	33.0 hrs
Bldg 4.4.6.2	$ 28,876	$ 8,663	$ 17,326	$ 2,888	143.4 hrs
Bldg 4.4.6.2-O	$ 20,626	$ 6,188	$ 12,376	$ 2,063	102.4 hrs
Bldg 4.4.6.3	$ 179,538	$ 55,085	$ 106,594	$ 17,860	931.9 hrs
Bldg 4.4.6.3-O	$ 25,887	$ 12,010	$ 6,458	$ 7,419	286.7 hrs
Bldg 4.4.6.4	$ 12,422	$ 3,727	$ 7,453	$ 1,242	61.7 hrs
Bldg 4.4.6.4-O	$ 27,810	$ 8,343	$ 16,686	$ 2,781	138.1 hrs
Bldg 4.4.6.5	$ 198,852	$ 59,656	$ 119,311	$ 19,885	873.8 hrs
Bldg 4.4.6.6	$ 264,416	$ 217,967	$ 3,931	$ 42,519	6,020.9 hrs
Bldg 4.4.6.7	$ 28,602	$ 8,581	$ 17,161	$ 2,860	142.0 hrs
Bldg 4.4.7.1	$ 41,828	$ 11,666	$ 30,162	$ -	336.7 hrs
Bldg 4.4.8.1.3	$ 13,832	$ 13,832	$ -	$ -	342.5 hrs
Bldg 4.7.2.1	$ 117,182	$ 34,449	$ 55,764	$ 26,969	603.3 hrs
Bldg 4.7.2.3	$ 40,951	$ 12,285	$ 24,570	$ 4,095	182.7 hrs
Bldg 4.7.2.4	$ 96,600	$ -	$ 96,600	$ -	-
Bldg 4.7.2.5	$ 10,845	$ 2,532	$ 7,229	$ 1,085	40.2 hrs
PROC 4.2.1.1	$ 2,697,734	$ 2,502,172	$ -	$ 195,563	61,172.4 hrs
PROC 4.2.1.2	$ 159,202	$ 15,565	$ -	$ 143,637	381.2 hrs
PROC 4.2.1.3	$ 490,288	$ 177,992	$ -	$ 312,296	4,378.1 hrs
PROC 4.2.1.7	$ 280,574	$ 84,172	$ 168,344	$ 28,057	1,217.9 hrs
PROC 4.2.2.4	$ 73,182	$ 3,407	$ -	$ 69,775	83.3 hrs
PROC 4.2.5.4	$ 17,201,938	$ 1,168,757	$ 14,499,371	$ 1,533,810	17,005.0 hrs
PROC 4.2.2.6	$ 824,691	$ 247,407	$ 494,815	$ 82,469	3,659.0 hrs
PROC 4.3.5.1	$ 624,250	$ 187,275	$ 374,550	$ 62,425	2,709.7 hrs
SPRP 4.1.8.1	$ 6,810	$ 2,043	$ 3,405	$ 1,362	29.9 hrs
SPRP 4.2.12.1	$ 20,430	$ 6,129	$ 10,215	$ 4,086	91.1 hrs
SPRP 4.3.8.1	$ 3,405	$ 1,022	$ 1,703	$ 681	14.8 hrs
SPRP 4.4.7.1	$ 4,084,141	$ 1,545,505	$ 1,529,268	$ 1,009,367	38,450.0 hrs
SPRP 4.4.7.2	$ 139,787	$ 50,476	$ 55,690	$ 33,621	892.9 hrs
SPRP 4.4.7.4	$ 3,802,843	$ 2,116,207	$ 665,273	$ 1,021,363	49,046.4 hrs
SPRP 4.4.8.1	$ 15,116	$ 9,070	$ 1,512	$ 4,535	154.9 hrs
SPRP 4.7.1.2	$ 174,400	$ 34,880	$ 34,880	$ 104,640	595.8 hrs
SPRP 4.7.1.3	$ 193,620	$ 4,086	$ 8,172	$ 181,362	69.8 hrs
SRP 4.2.12.1	$ -	$ -	$ -	$ -	-
SRP 4.4.7.1	$ -	$ -	$ -	$ -	-
SRP 4.4.8.1	$ -	$ -	$ -	$ -	-
STIE 4.1.7.4	$ 13,350	$ 9,345	$ 2,002	$ 2,002	137.0 hrs
STIE 4.2.1.1	$ 12,348	$ 9,404	$ 460	$ 2,484	229.9 hrs
STIE 4.2.11.1	$ 532,906	$ 201,708	$ 64,098	$ 267,100	4,721.3 hrs
STIE 4.2.11.2	$ 5,841	$ 2,336	$ 2,336	$ 1,168	39.9 hrs
STIE 4.3.7.2	$ 13,350	$ 9,345	$ 2,002	$ 2,002	137.0 hrs
TOTAL	**$ 45,604,124**	**$ 15,017,646**	**$ 21,968,887**	**$ 8,617,592**	**343,230.9 hrs**

Subtotal (Office Costs Only)	**$ 803,682**	**$ 306,750**	**$ 399,154**	**$ 97,777**	**5,820.5 hrs**

9 Appendix C – OPG Cost Summary

DNGS Heavy Water Management Building - OPG Costs

Total Project Estimate Costs **4,352,301**

Department	Hours	Rate	Cost
IT	446		74,117
Admin	202		11,880
CMO	3,017		277,908
Department Manager	737		98,257
Design Team Leader	1,994		176,470
Project Design	10,890		987,195
Field Engineer	5,332		445,346
Station support	3,852		330,771
Project Management Office	3,912		362,567
Design Project	16,274		1,520,391
Trades	0		0
Total	**46,656**		**4,284,901**

[From US Cost Export]

DNGS Heavy Water Management Building - OPG Costs

Project : D2O STORAGE FACILITY

Code	Description	Hours	Rate	Labor Cost
EM_DTSIN	DesignContract_Technical_Specialist_Intermediate	226	155.22	35,002
EM_DTSSR	DesignContract_Technical_Specialist_Senior	221	177.39	39,114
Design Contract Total		446	**Rate**	74,117
EM_OADAS	Administrative Assistant	202	58.93	11,880
Clerical Support		202	**Rate**	11,880
EM_OCMCA	Contract Administrator	1,803	100.26	180,729
EM_OCMCM	Contract Monitor	1,058	77.04	81,539
EM_OCMFM	FLM Modifications CMO	156	100.26	15,641
CMO Total		3,017	Rate	277,908
EM_ODPMR	Department Manager	737	133.32	98,257
Department Manager Total		737	**Rate**	98,257
EM_OEDTL	Design Team Leader	1,994	88.48	176,470
Design Team Leader Total		1,994	**Rate**	176,470
EM_OEELE	Electrical Engineer	309	88.48	27,362
EM_OEICE	Instrumentation and Control	330	88.48	29,236
EM_OSMTC	Section Manager - Technical	735	97.76	71,854
EM_OEMME	Mechanical Engineer	417	88.48	36,901
EM_OESRE	Engineer Others	7,881	88.48	697,311
EM_OESTE	Structural/Civil Engineer	386	88.48	34,114
EM_OESMR	Engineer ing Section Manager	832	108.68	90,417
Project Design Total		10,890	**Rate**	987,195
EM_OFECV	Field Engineering Civil	1,274	77.04	98,149
EM_OFEEL	Field Engineering Electrical	884	77.04	68,125
EM_OFEFM	FLM Modifications FE	1,489	100.26	149,258
EM_OFEME	Field Engineering Mechanical	1,685	77.04	129,814
Field Engineering Total		5,332	**Rate**	445,346
EM_OMTFM	FLM Maintenance	996	100.26	99,820
EM_OOPFM	FLM Operations	835	100.26	83,747
EM_ORADT	Radiation Technician	560	68.29	38,208
EM_OSTCM	Control Maintainer	677	78.72	53,300
EM_OSTMM	Mechanical Maintainer	53	79.03	4,189
EM_OSTNO	Nuclear Operator	403	76.87	30,979
EM_OSTCV	Civil Maintainer	328	62.51	20,528
Station Support Total		3,852	**Rate**	330,771

DNGS Heavy Water Management Building - OPG Costs

EM_OPCMST	Cost and Schedule Technician	362	77.37	28,011
EM_OPCSA	Cost and Schedule Analyst	3,550	94.24	334,556
Project Managemnet Office Total		3,912	**Rate**	362,567
EM_OPRL1	Project MP4	8,314	88.48	735,648
EM_OPRL2	Project MP5	4,712	88.48	416,874
EM_OPRMR	Design Projects Project Manager	3,248	113.26	367,868
Design Project Total		16,274	**Rate**	1,520,391
				0
Trades Total		0		0
LABOR TOTAL		**46,656**		**4,284,901**

EQUIPMENT		
ZEXPEN	General Expenses	60,900
ZTRAVL	Travel Expenses	6,500
ZCMO_DNG	CMO Allocation	
EQUIPMENT TOTAL		**67,400**

MATERIAL		
MATERIAL TOTAL		**0**

EPSCA		
EPSCA TOTAL		**0**

10 Appendix D – Construction Cost Estimate

DNGS Heavy Water Management Building - Construction Cost Estimate

1.65

Ref	Item	NRM Ref	PBS	Quantity L [m]	W [m]	H [m]	Nr [each]	Qty	Unit	Labour Norm Hrs/unit	Norm Unit	Norm Ref	Zone	Productivity [multiplier]	DFL Hours [Hrs]	Crew	Crew Rate [$/hr]	Labour Total [$]	Construction Equipment Rate [$/unit]	Equipment Total [$]	Materials Rate [GBP/unit]	Rate [CAD$/unit]	Material Total [$]
	[formulas >>>]							-						-	-		-	$ -		$ -		-	$ -
	EXTERNAL WORKS																						
	Remove existing surfaces							-						-	-		-	$ -		$ -		-	$ -
1	Clearing of Site / Site strip; 250mm deep	8.1.1.1	SPRP 4.4.7.1	56.00	30.50		1.00	1,708.00	m2		m2	PP-DMCDF	Unzoned	1.70	-	Groundworks	58.54	$ -		$ -		-	$ -
2	Remove existing Conc Curbs & Dispose	8.1.2.3	SPRP 4.4.7.1	150.00			1.00	150.00	m	0.02	m	CEpg364	Unzoned	1.70	5.10	Groundworks	58.54	$ 298.56	3.50	$ 524.70		-	$ -
3	Remove existing Asphalt pavement and dispose	8.1.2.3	SPRP 4.4.7.1	80.00	7.00		1.00	560.00	m2	0.03	m2	CEpg419	Unzoned	1.70	28.56	Groundworks	58.54	$ 1,671.96	10.43	$ 5,839.68		-	$ -
								-						-	-		-	$ -		$ -			$ -
	Ground investigation							-						-	-		-	$ -		$ -		-	$ -
4	Trial trenches, 3m deep; 5.0m x 0.50m	9.5.3.1	SPRP 4.4.7.1				6.00	6.00	nr	3.18	nr	CEpg419	Unzoned	1.70	32.44	Groundworks	58.54	$ 1,898.87	42.27	$ 253.64		-	$ -
5	Trial trenches, 3m deep, commencing from 3m depth; 5.0m x 0.50m	9.5.3.1	SPRP 4.4.7.1				6.00	6.00	nr	3.18	nr	CEpg419	Unzoned	1.70	32.44	Groundworks	58.54	$ 1,898.87	42.27	$ 253.64		-	$ -
	Temporary services							-						-	-		-	$ -		$ -		-	$ -
6	External Lighting; Lighting Columns, OPG Security Standard c/w with lamp 8m high 2 luminaries		Bldg 4.7.2.5				4.00	4.00	nr		nr	PP-DMCDF	Unzoned	1.70	-	External Lighting	64.38	$ -		$ -		-	$ -
7	Lunchroom Trailers and Washroom Trailers 22ft * 7ft 6" c.w Drying Racks, Lockers, Tables, Seating, heaters, Microwave, etc. Including transportation @$1200/mnth		Bldg 4.7.2.4				28.00	28.00	mnths				Unzoned	1.70	-	Groundworks	58.54	$ -		$ -		-	$ -
8	Temporary Offices - 3 - 20' office trailers for 28 months rental @ $750 ea per month including furniture, mobilisation and demobilisation		Bldg 4.7.2.4				28.00	28.00	mnths				Unzoned	1.70	-	Groundworks	58.54	$ -		$ -		-	$ -
	Site access road							-						-	-		-	$ -		$ -		-	$ -
9	Temporary road to new site	8.2.1.1	Bldg 4.7.2.1	120.00	7.00		1.00	840.00	m2		m2	ARpg429/430	Unzoned	1.70	-	Roadworks Crew	58.54	$ -		$ -		-	$ -
	Temporary car parking							-						-	-		-	$ -		$ -		-	$ -
10	Car parking alternatives	8.2.1.3	Bldg 4.7.2.1	6.00	3.00		20.00	360.00	m2		m2	CEpg579	Unzoned	1.70	-	Roadworks Crew	58.54	$ -		$ -		-	$ -
	Temporary Fencing, Railing and Walls							-						-	-		-	$ -		$ -		-	$ -
11	Fencing, OPG Standard Security height, 2.4m; Corner posts braced, intermediate posts at 3m centres, 1.2m set in ground, concrete surround.	8.4.1.1	Bldg 4.7.2.3	220.00			1.00	220.00	m		m	PP-DMCDF	Unzoned	1.70	-	Fencing	67.24	$ -		$ -		-	$ -
12	Pedestrian access around new site		Bldg 4.7.2.1	120.00	5.00		1.00	600.00	m2	0.02	m2	Cepg 289	Unzoned	1.70	20.40	Roadworks Crew	58.54	$ 1,194.26	0.67	$ 402.00	6.05	9.98	$ 5,989.50
13	Gates (3.6 Mx1.175 H)	8.4.1.3	Bldg 4.7.2.1				4.00	4.00	nr		nr	CE pg 336	Unzoned	1.70	-	Fencing	67.24	$ -		$ -		-	$ -
	Street Furniture							-						-	-		-	$ -		$ -		-	$ -
14	External Lighting; Lighting Columns, OPG Security Standard c/w with lamp 8m high 2 luminnaire	8.7.9.2	SPRP 4.4.7.2				5.00	5.00	nr		nr	PP-DMCDF	Unzoned	1.70	-	External Lighting	64.38	$ -		$ -		-	$ -
15	Bollards; permanent bollard; non illuminated; galvanised steel removable and lockable pattern	8.4.4.3	SPRP 4.4.7.2				40.00	40.00	nr	0.80	nr	CEpg441	Unzoned	1.70	54.40	Concrete	62.13	$ 3,380.06	19.02	$ 760.98	131.26	216.58	$ 8,663.16
16	Turnstiles		SPRP 4.4.7.2				4.00	4.00	nr		nr	PP-WESB	Unzoned	1.70	-	Building Works	60.43	$ -		$ -		-	$ -
17	Directional signage		SPRP 4.4.7.2				10.00	10.00	nr	0.09	nr	ARpg401	Unzoned	1.70	1.53	Concrete	62.13	$ 95.06		$ -	250.00	412.50	$ 4,125.00
18	Removal of one Light post incld UG cable		SPRP 4.4.7.2				1.00	1.00	nr	0.61	nr	CEpg365	Unzoned	1.70	1.04	External Lighting	64.38	$ 66.76	68.24	$ 68.24		-	$ -
	External drainage							-						-	-		-	$ -		$ -		-	$ -
19	Sewer line connections to main line		STIE 4.2.11.2	40.00			1.00	40.00	m		m	PP-DMCDF	Zone 3	2.33	-	Groundworks	58.54	$ -		$ -		-	$ -
20	Storm water connections to main line		STIE 4.2.11.2	110.00			1.00	50.00	m		m	Rate Buildup	Zone 3	2.33	-	Groundworks	58.54	$ -		$ -		-	$ -
21	Manholes/Access chambers; 750 x 700 chamber 1500 depth to invert; includes excavation, support, backfilling and disposal, concrete base, brickwork chamber, concrete cover slab, concrete benching and channels, step irons, access cover and frames	8.6.1.5	SPRP 4.4.7.2				6.00	6.00	nr		nr	CEpg229	Unzoned	1.70	-	Groundworks	58.54	$ -		$ -		-	$ -
22	Valve Chambers; 1.2m diameter x 2.5m depth	8.6.1.5	SPRP 4.4.7.2				4.00	4.00	nr		nr	CEpg390	Unzoned	1.70	-	Groundworks	58.54	$ -		$ -		-	$ -
23	Weeper tiles (perforated pipe in drainage under slab on grade c/w Geotextile membrane and stone surround (600mm Dia)		SPRP 4.4.7.1				155.00	155.00	m					-	-	Groundworks	58.54	$ -		$ -		-	$ -
24	Excavation in rock for weeper tile (1mx1mx1m)		SPRP 4.4.7.1	155.00			1.00	155.00	m3	0.80	m3	CEpg169	Unzoned	1.70	210.80	Groundworks	58.54	$ 12,340.65	49.19	$ 7,623.91		-	$ -
	Connection to existing services							-						-	-		-	$ -		$ -		-	$ -
25	Main water line connections	8.7.1.1	Bldg 4.2.1.4	40.00			1.00	20.00	m		m	ARpg158	Unzoned	1.70	-	Plumbers	66.47	$ -		$ -		-	$ -
26	Fire Hydrants		Bldg 4.2.10.2				2.00	2.00	nr	7.50	nr	MEpg253	Unzoned	1.70	25.50	Plumbers	66.47	$ 1,694.99		$ -	727.76	1,200.80	$ 2,401.61
27	CCTV cameras		Bldg 4.1.3.6-O				16.00	16.00	nr		nr	PP-WESB	Unzoned	1.70	-	Electrical Workers	68.23	$ -		$ -		-	$ -
28	Buried Services - Appendix - F - Standby Generator Cable Duct		SPRP 4.1.8.1	1.00			1.00	1.00	item				Unzoned	1.70	-	Electrical Workers	68.23	$ -		$ -		-	$ -
29	Buried Services - Appendix - F - Service water - Low pressure		SPRP 4.2.12.1	1.00			1.00	1.00	item				Unzoned	1.70	-	Plumbers	66.47	$ -		$ -		-	$ -
30	Buried Services - Appendix - F - Cables 500 below Ground		SPRP 4.1.8.1	1.00			1.00	1.00	item				Unzoned	1.70	-	Electrical Workers	68.23	$ -		$ -		-	$ -
31	Buried Services - Appendix - F- 12" Steam & 3" Condensate return		SPRP 4.2.12.1	1.00			1.00	1.00	item				Unzoned	1.70	-	Pipefitters	69.11	$ -		$ -		-	$ -
32	Buried Services - Appendix - F- 6" Air		SPRP 4.2.12.1	1.00			1.00	1.00	item				Unzoned	1.70	-	Pipefitters	69.11	$ -		$ -		-	$ -
33	Buried Services - Appendix - F- 8" Water		SPRP 4.2.12.1	1.00			1.00	1.00	item				Unzoned	1.70	-	Plumbers	66.47	$ -		$ -		-	$ -
34	Buried Services - Appendix - F- Inactive Drainage		SPRP 4.2.12.1	1.00			1.00	1.00	item				Unzoned	1.70	-	Groundworks	58.54	$ -		$ -		-	$ -
35	Buried Services - Appendix - F- Misc Fire Line		SPRP 4.3.8.1	1.00			1.00	1.00	item				Unzoned	1.70	-	Pipefitters	69.11	$ -		$ -		-	$ -
36	Buried Services - Appendix - F-Fire Protection		SPRP 4.3.8.1	1.00			1.00	1.00	item				Unzoned	1.70	-	Pipefitters	69.11	$ -		$ -		-	$ -
37	Buried Services - Appendix - F-Helium		SPRP 4.2.12.1	1.00			1.00	1.00	item				Unzoned	1.70	-	Pipefitters	69.11	$ -		$ -		-	$ -
38	Buried Services - Appendix - F- Oxygen		SPRP 4.2.12.1	1.00			1.00	1.00	item				Unzoned	1.70	-	Pipefitters	69.11	$ -		$ -		-	$ -
39	Buried Services - Appendix - F-Argon		SPRP 4.2.12.1	1.00			1.00	1.00	item				Unzoned	1.70	-	Pipefitters	69.11	$ -		$ -		-	$ -
40	Buried Services - Appendix - F-Nitrogen		SPRP 4.2.12.1	1.00			1.00	1.00	item				Unzoned	1.70	-	Pipefitters	69.11	$ -		$ -		-	$ -
41	Buried Services - Appendix - F-Box Drain Sump		SPRP 4.2.12.1	1.00			1.00	1.00	item				Unzoned	1.70	-	Groundworks	58.54	$ -		$ -		-	$ -
42	Buried Services - Appendix - F-600 mm Dia Corrugated Steel Pipe CSP Yard Drainage		SPRP 4.2.12.1	1.00			1.00	1.00	item				Unzoned	1.70	-	Groundworks	58.54	$ -		$ -		-	$ -
43	Relocate Existing Cable Duct from Standby Generators OIL Tanks # 1 & 2		SPRP 4.2.12.1	50.00			1.00	1.00	item				Unzoned	1.70	-	Electrical Workers	68.23	$ -		$ -		-	$ -
44	Relocate existing Low Pressure Service Water open system piping.		SPRP 4.2.12.1	30.00			1.00	1.00	item				Unzoned	1.70	-	Plumbers	66.47	$ -		$ -		-	$ -
	Demolition/removal of existing structures							-						-	-		-	$ -		$ -		-	$ -

DNGS Heavy Water Management Building - Construction Cost Estimate

1.65

Ref	Item	NRM Ref	PBS	Quantity L [m]	W [m]	H [m]	Nr [each]	Qty	Unit	Labour Norm Hrs/unit	Norm Unit	Norm Ref	Zone	Productivity [multiplier]	DFL Hours [Hrs]	Crew	Crew Rate [$/hr]	Labour Total [$]	Construction Equipment Rate [$/unit]	Equipment Total [$]	Materials Rate [GBP/unit]	Rate [CAD$/unit]	Material Total [$]
45	Demolition of existing building (Offices)	9.2.1.1	SPRP 4.4.8.1	7.00	3.00	2.50	3.00	157.50	m3		m3	CE pg162	Unzoned	1.70	-	Groundworks	58.54	$ -		$ -		-	$ -
46	Demolition of existing underground services (Offices)	9.2.1.2	SPRP 4.4.8.1	7.00	3.00	0.50	3.00	31.50	m3		m3	CE pg162	Unzoned	1.70	-	Groundworks	58.54	$ -		$ -		-	$ -
47	Temporary Terminating of services	9.4.1.2	Bldg 4.7.2.5				4.00	4.00	nr		nr	MEpg226	Unzoned	1.70	-	Groundworks	58.54	$ -		$ -		-	$ -
	Asphalt road							-						-	-		-	$ -		$ -		-	$ -
48	Reinstatement of Asphalt road (incld roadbase)		SPRP 4.4.7.2	40.00	4.00		1.00	160.00	m2		m2	ARpg429/430	Unzoned	1.70	-	Roadworks Crew	58.54	$ -		$ -		-	$ -
49	New Kerbs at roads (reinstated road portions)		SPRP 4.4.7.2	64.00			1.00	64.00	m		m	CE pg 80	Unzoned	1.70	-	Roadworks Crew	58.54	$ -		$ -		-	$ -
50	Line painting;Continuous line in reflectorised white 200mm wide		SPRP 4.4.7.2	160.00			1.00	160.00	m		m	CEpg439	Unzoned	1.70	-	Roadworks Crew	58.54	$ -		$ -		-	$ -
51	Road signs		SPRP 4.4.7.2				4.00	4.00	nr		nr	ARpg155	Unzoned	1.70	-	Roadworks Crew	58.54	$ -		$ -		-	$ -
								-						-	-		-	$ -		$ -		-	$ -
	Sub-Total																	**$ 24,540.05**		**$ 15,726.79**			**$ 21,179.27**
	SITE INVESTIGATION																						
52	CAT scan of existing buried services and other obstacles	9.5.3.1	SPRP 4.4.7.1				1.00	1.00	item				Unzoned	1.70	-	Groundworks	58.54	$ -		$ -		-	$ -
								-						-	-		-	$ -		$ -		-	$ -
	Sub-Total																	**$ -**		**$ -**			**$ -**
	WORKS TO EXISTING STRUCTURES																						
53	Remove existing Loading bay and Dock	7.1.1.1	SPRP 4.4.8.1	6.00	5.50	2.50	1.00	82.50	m3		m3	CE pg162	Unzoned	1.70	-	Groundworks	58.54	$ -		$ -		-	$ -
54	Cut and patch at new openings for pipes	7.1.1.2	SPRP 4.4.7.2				50.00	50.00	nr		nr		Zone 3	2.33	-	Building works	60.43	$ -		$ -		-	$ -
55	New door for Access to new building	7.1.1.2	Bldg 4.4.6.1				1.00	1.00	nr		nr	ARp141	Unzoned	1.70	-	Building works	60.43	$ -		$ -		-	$ -
	Minor building works							-						-	-		-	$ -		$ -		-	$ -
56	Repairs to existing building after Ramp removal	8.8.1.1	SPRP 4.4.7.2	25.00	5.00		1.00	125.00	m2		m2	ARp489	Zone 3	2.33	-	Building works	60.43	$ -		$ -		-	$ -
57	Repairs to existing building after Loading dock removal	8.8.1.3	SPRP 4.4.7.2	5.00	5.00		1.00	25.00	m2		m2	ARp489	Zone 3	2.33	-	Building works	60.43	$ -		$ -		-	$ -
								-						-	-		-	$ -		$ -		-	$ -
	Sub-Total																	**$ -**		**$ -**			**$ -**
	SUBSTRUCTURE																						
	EXCAVATION							-						-	-		-	$ -		$ -		-	$ -
	Bulk excavation							-						-	-		-	$ -		$ -		-	$ -
58	Vacuum Excavation (uptp 2.5 M) at buried services (4 weeks@$40,000/week		SPRP 4.7.1.2				4.00	4.00	wks					-	-	Groundworks	58.54	$ -		$ -		-	$ -
59	Hand Excavation around buried services		SPRP 4.4.7.1	25.00	0.30	0.30	4.00	9.00	m3	3.15	m3	CE pg 183	Unzoned	1.70	48.20	Groundworks	58.54	$ 2,821.43		$ -		-	$ -
60	Bulk excavation for tank farm; 10-15m max depth		SPRP 4.4.7.1	24.50	50.00	12.50		15,312.50	m3	0.29	m3	CEpg169	Unzoned	1.70	7,549.06	Groundworks	58.54	$ 441,937.22	17.79	$ 272,363.44		-	$ -
61	Extra over for excavation in rock; 1.0-2.0m maximum depth		SPRP 4.4.7.1	24.50	50.00	1.00		1,225.00	m3	0.80	m3	CEpg168	Unzoned	1.70	1,666.00	Groundworks	58.54	$ 97,530.97	49.19	$ 60,253.46		-	$ -
62	Disposal of excavated material to temporary spoil heap; 100m from excavations		SPRP 4.4.7.4	15,312.50				15,312.50	m3	0.05	m3	CEpg171	Unzoned	1.70	1,301.56	Groundworks	58.54	$ 76,196.07	4.22	$ 64,680.00		-	$ -
63	Disposal of excavated rock material to temporary spoil heap; 100m from excavations		SPRP 4.4.7.4	1,225.00				1,225.00	m3	0.06	m3	CEpg171	Unzoned	1.70	124.95	Groundworks	58.54	$ 7,314.82	5.08	$ 6,225.45		-	$ -
64	Disposal of excavated rock material to temporary spoil heap; removal 15 km distance; using 20 t tipper		SPRP 4.4.7.4	1,225.00				1,225.00	m3	0.23	m3	CEpg171	Unzoned	1.70	478.98	Groundworks	58.54	$ 28,040.15	22.23	$ 27,226.24		-	$ -
65	Disposal of excavated material from temporary spoil heap to licensed tip; Contaminated waste; removal 15 km distance; using 20 t tipper		SPRP 4.4.7.4	7,656.25				7,656.25	m3	0.22	m3	CEpg171	Unzoned	1.70	2,863.44	Groundworks	58.54	$ 167,631.36	21.25	$ 162,710.63		-	$ -
66	Disposal of excavated material from temporary spoil heap to licensed tip; Contaminated waste; removal 15 km distance; using 20 t tipper; ADDITIONAL for contaminated sludge		SPRP 4.4.7.4	7,656.25				7,656.25	m3		m3	CEpg171	Unzoned	1.70	-	Groundworks	58.54	$ -		$ -		-	$ -
67	Disposal of excavated material from temporary spoil heap to licensed tip; Un-contaminated waste; removal 15 km distance; using 20 t tipper		SPRP 4.4.7.4	7,656.25				7,656.25	m3	0.22	m3	CEpg171	Unzoned	1.70	2,863.44	Groundworks	58.54	$ 167,631.36	21.25	$ 162,710.63		-	$ -
68	Double handling of excavated earth material; using 1.5 m3 tractor loader and 22.5 t ADT; 1000m average distance moved		SPRP 4.4.7.4	15,312.50				15,312.50	m3	0.12	m3	CEpg171	Unzoned	1.70	3,123.75	Groundworks	58.54	$ 182,870.57	8.81	$ 134,918.44		-	$ -
69	Double handling of excavated rock material; using 1.5 m3 tractor loader and 22.5 t ADT; 1000m average distance moved		SPRP 4.4.7.4	1,225.00				1,225.00	m3	0.20	m3	CEpg171	Unzoned	1.70	416.50	Groundworks	58.54	$ 24,382.74	14.70	$ 18,009.34		-	$ -
70	Contaminated waste disposal fees (766 loads x 10 = 7660 M3)		SPRP 4.4.7.4	765.63				765.63	loads			not included	Unzoned	1.70	-	Groundworks	58.54	$ -		$ -		-	$ -
	Detailed excavation							-						-	-		-	$ -		$ -		-	$ -
71	Detailed excavation for 100Mg tanks; in rock; 1.0-2.0m maximum depth	1.1.1.1	SPRP 4.4.7.1	3.14	9.00	1.50	19.00	805.82	m3	0.80	m3	CEpg169	Unzoned	1.70	1,095.91	Groundworks	58.54	$ 64,156.95	49.19	$ 39,635.39		-	$ -
72	Detailed excavation for 50Mg tanks; in rock; 1.0-2.0m maximum depth	1.1.1.1	SPRP 4.4.7.1	3.14	6.25	1.50	2.00	58.90	m3	0.80	m3	CEpg169	Unzoned	1.70	80.11	Groundworks	58.54	$ 4,689.84	49.19	$ 2,897.32		-	$ -
73	Detailed excavation for 25Mg tanks; in rock	1.1.1.1	SPRP 4.4.7.1	3.14	5.06	1.50	4.00	95.43	m3	0.80	m3	CEpg169	Unzoned	1.70	129.78	Groundworks	58.54	$ 7,597.53	49.19	$ 4,693.66		-	$ -
74	Detail Excavation for dike foundations; in rock; 1.0-2.0m maximum depth	1.1.1.1	SPRP 4.4.7.1	24.50	1.70	1.00	2.00	83.30	m3	0.80	m3	CEpg169	Unzoned	1.70	113.29	Groundworks	58.54	$ 6,632.11	49.19	$ 4,097.24		-	$ -
75	Detail Excavation for dike foundations; in rock; 1.0-2.0m maximum depth	1.1.1.1	SPRP 4.4.7.1	50.00	1.70	1.00	2.00	170.00	m3	0.80	m3	CEpg169	Unzoned	1.70	231.20	Groundworks	58.54	$ 13,534.91	49.19	$ 8,361.71		-	$ -
76	Excavation for Inspection pit	1.1.1.1	SPRP 4.4.7.1	5.50	5.50	13.00	1.00	393.25	m3	0.29	m3	CEpg169	Unzoned	1.70	193.87	Groundworks	58.54	$ 11,349.67	17.79	$ 6,994.74		-	$ -
77	Excavation for Inspection pit ; in rock	1.1.1.1	SPRP 4.4.7.1	5.50	5.50	3.00	1.00	90.75	m3	0.80	m3	CEpg169	Unzoned	1.70	123.42	Groundworks	58.54	$ 7,225.25	49.19	$ 4,463.67		-	$ -
78	Detail Excavation for Weeper Tiles in Rock	1.1.1.1	SPRP 4.4.7.1	172.00	0.40	0.35	1.00	24.08	m3	0.80	m3	CEpg169	Unzoned	1.70	32.75	Groundworks	58.54	$ 1,917.18	49.19	$ 1,184.41		-	$ -
79	Disposal of caisson spoils; removal 15 km distance; using 20 t tipper	8.8.3.1	SPRP 4.4.7.4	25.50	0.40	15.00	2.00	306.00	m3	0.22	m3	CEpg171	Unzoned	1.70	114.44	Groundworks	58.54	$ 6,699.78	21.25	$ 6,503.11		-	$ -
80	Disposal of caisson spoils; removal 15 km distance; using 20 t tipper	8.8.3.1	SPRP 4.4.7.4	51.00	0.40	15.00	2.00	612.00	m3	0.22	m3	CEpg171	Unzoned	1.70	228.89	Groundworks	58.54	$ 13,399.56	21.25	$ 13,006.22		-	$ -
81	Disposal of excavated rock material to temporary spoil heap; 100m from excavations	1.2.1.5	SPRP 4.4.7.4	1,328.28				1,328.28	m3	0.06	m3	CEpg171	Unzoned	1.70	135.48	Groundworks	58.54	$ 7,931.53	5.08	$ 6,750.32		-	$ -
82	Disposal of excavated material to temporary spoil heap; 100m from excavations	1.2.1.5	SPRP 4.4.7.4	393.25				393.25	m3	0.05	m3	CEpg171	Unzoned	1.70	33.43	Groundworks	58.54	$ 1,956.84	4.22	$ 1,661.09		-	$ -

DNGS Heavy Water Management Building - Construction Cost Estimate

1.65

Ref	Item	NRM Ref	PBS	Quantity L [m]	W [m]	H [m]	Nr [each]	Qty	Unit	Labour Norm Hrs/unit	Unit	Norm Ref	Zone	Productivity [multiplier]	DFL Hours [Hrs]	Crew	Crew Rate [$/hr]	Labour Total [$]	Construction Equipment Rate [$/unit]	Equipment Total [$]	Materials Rate [GBP/unit]	[CAD$/unit]	Material Total [$]
83	Disposal of excavated rock material to temporary spoil heap; removal 15 km distance; using 20 t tipper		SPRP 4.4.7.4	1,328.28				1,328.28	m3	0.23	m3	CEpg171	Unzoned	1.70	519.36	Groundworks	58.54	$ 30,404.21	22.23	$ 29,521.67		-	$ -
84	Disposal of excavated material from temporary spoil heap to licensed tip; Contaminated waste; removal 15 km distance; using 20 t tipper		SPRP 4.4.7.4	393.25				393.25	m3	0.22	m3	CEpg171	Unzoned	1.70	147.08	Groundworks	58.54	$ 8,610.09	21.25	$ 8,357.35		-	$ -
85	Double handling of excavated earth material; using 1.5 m3 tractor loader and 22.5 t ADT; 1000m average distance moved		SPRP 4.4.7.4	393.25				393.25	m3	0.12	m3	CEpg171	Unzoned	1.70	80.22	Groundworks	58.54	$ 4,696.41	8.81	$ 3,464.93		-	$ -
86	Double handling of excavated rock material; using 1.5 m3 tractor loader and 22.5 t ADT; 1000m average distance moved		SPRP 4.4.7.4	1,328.28				1,328.28	m3	0.20	m3	CEpg171	Unzoned	1.70	451.61	Groundworks	58.54	$ 26,438.44	14.70	$ 19,527.70		-	$ -
87	Contaminated waste disposal fees	1.2.1.2	SPRP 4.4.7.4	39.33				39.33	loads	0.22		CEpg171	Unzoned	1.70	14.71	Groundworks	58.54	$ 861.01		$ -		-	$ -
	Earthwork support							-						-	-		-	$ -		$ -		-	$ -
88	Caissons; bored in situ reinforced concrete piling; vertical 450mm diameter cast-in-place piles; 20N/mm2 concrete; nominal reinforcement	8.8.3.1	SPRP 4.4.7.1			14.00	504.00	7,056.00	m		m	CEpg453	Unzoned	1.70	-	Concrete	62.13	$ -		$ -		-	$ -
89	Caissons; bored in situ reinforced concrete piling; vertical 450mm diameter empty bores	8.8.3.1	SPRP 4.4.7.1			14.00	504.00	7,056.00	m		m	CEpg453	Unzoned	1.70	-	Groundworks	58.54	$ -		$ -		-	$ -
90	Trimming material other than topsoil, rock or artificial hard material; using D4H dozer, tractor loader or motor grader average rate to sides of caisson walls; 45-90˚ to horizontal	8.8.3.1	SPRP 4.4.7.1	149.00		12.50	1.00	1,862.50	m2	0.06	m2	CEpg170	Unzoned	1.70	189.98	Groundworks	58.54	$ 11,121.52	2.06	$ 3,841.41		-	$ -
91	Trimming rock; using D6E dozer; vertical to sides of caisson walls	8.8.3.1	SPRP 4.4.7.1	149.00			1.00	149.00	m2	1.06	m2	CEpg170	Unzoned	1.70	268.50	Groundworks	58.54	$ 15,718.41	39.55	$ 5,893.02		-	$ -
92	Steel in Caissons (Soldier Piles) IPN 280 @ 54Kgs/LM; 203 x 203 mm; length 15m		SPRP 4.4.7.1				30.00	30.00	nr		nr	CEpg267	Unzoned	1.70	-	Concrete	62.13	$ -		$ -		-	$ -
93	Waterproofing to sides of wall (inside face); Bituthene 4000; lapped joints; at any inclination	1.3.1.1	SPRP 4.4.7.1	149.00		15.00	1.00	2,235.00	m2	0.08	m2	CEpg479	Unzoned	1.70	303.96	Groundworks	58.54	$ 17,794.43	2.16	$ 4,830.95	12.84	21.19	$ 47,350.71
94	Shoring for inspection pit	8.8.3.1	SPRP 4.4.7.1	28.00		16.00	1.00	448.00	m2				Unzoned	1.70	-	Groundworks	58.54	$ -		$ -		-	$ -
	Dewatering							-						-	-		-	$ -		$ -		-	$ -
95	Dewatering equipment (rental 3months)	9.3.1.1	SPRP 4.7.1.3				1.00	1.00	item				Unzoned	1.70	-	Groundworks	58.54	$ -		$ -		-	$ -
96	Holding tanks and filter bags(rental 3months)	9.3.1.1	SPRP 4.7.1.3				1.00	1.00	item				Unzoned	1.70	-	Groundworks	58.54	$ -		$ -		-	$ -
97	75mm pipes for temp dewatering - 2 lines for 300m length discharge to Intake		SPRP 4.7.1.3	600.00			1.00	600.00	m				Unzoned	1.70	-	Groundworks	58.54	$ -		$ -		-	$ -
98	Pumps rental (3 months) 600 V - 2 ea		SPRP 4.7.1.3				6.00	6.00	mnths				Unzoned	1.70	-	Groundworks	58.54	$ -		$ -		-	$ -
99	Diesel Genset for Pumps rental (3 months)		SPRP 4.7.1.3				6.00	6.00	mnths				Unzoned	1.70	-	Groundworks	58.54	$ -		$ -		-	$ -
100	Diesel fuel (50 liters daily for 60 daysx2 ea)		SPRP 4.7.1.3	1.00	1.00	1.00	6,000.00	6,000.00	litres				Unzoned	1.70	-	Groundworks	58.54	$ -		$ -		-	$ -
								-						-	-		-	$ -		$ -		-	$ -
	BELOW GROUND CONSTRUCTION							-						-	-		-	$ -		$ -		-	$ -
	Slab on grade							-						-	-		-	$ -		$ -		-	$ -
101	Level and compact bottoms of excavations	1.4.1.1	Bldg 4.4.7.1	21.50	47.00		1.00	1,010.50	m2	0.08	m2	CEpg170	Unzoned	1.70	137.43	Groundworks	58.54	$ 8,045.31	29.85	$ 30,161.91		-	$ -
102	Formwork to sides of slab on grade; plane vertical; width 0.3m	1.4.1.1	Bldg 4.4.1.1	137.00		0.30	1.00	41.10	m2	0.70	m2	CEpg 192	Unzoned	1.70	48.91	Concrete	62.13	$ 3,038.89	13.41	$ 551.34	9.47	15.63	$ 642.21
103	Reinforcement to insitu concrete slab; 100kg/m3; deformed high yield steel bars in bent and cut lengths; using 16mm nominal size	1.4.1.1	Bldg 4.4.1.2				30.50	30.50	MT	6.15	Tonne	CEpg196	Unzoned	1.70	318.88	Concrete	62.13	$ 19,812.98	149.94	$ 4,573.03	682.96	1,126.88	$ 34,369.76
104	Insitu concrete slab on grade; Grade C40 cement; 300mm thick	1.4.1.1	Bldg 4.4.1.1	21.50	47.00	0.30	1.00	303.15	m3	0.18	m3	CEpg190/187	Unzoned	1.70	92.76	Concrete	62.13	$ 5,763.75	19.06	$ 5,777.28		225.00	$ 68,208.75
105	Less: Pad foundations for tanks	1.4.1.1	Bldg 4.4.1.1				(80.00)	(80.00)	m3	0.18	m3	CEpg190/187	Unzoned	1.70	(24.48)	Concrete	62.13	$ (1,521.03)	19.06	$ (1,524.60)		225.00	$ (18,000.00)
106	Surface finish to insitu concrete slab on grade; Float finish		Bldg 4.4.1.1	21.50	47.00		1.00	1,010.50	m2	0.02	m2	CEpg 202	Unzoned	1.70	34.36	Concrete	62.13	$ 2,134.72		$ -		-	$ -
107	Weeping tiles below slab on grade; 225mm pipes unplasticized pvc pipes	1.4.1.8	Bldg 4.4.1.1	172.00			1.00	172.00	m	0.07	m	CEpg222	Unzoned	1.70	20.47	Groundworks	58.54	$ 1,198.24	0.74	$ 127.71	72.06	118.90	$ 20,450.63
	Pad foundations for tanks							-						-	-		-	$ -		$ -		-	$ -
108	Formwork for 19 - 100 Mg Tank Foundations; curved; width exceeding 1.22m	1.1.1.1	Bldg 4.4.1.1	6.28	3.50	2.00	19.00	835.66	m2	0.52	m2	CEpg192	Unzoned	1.70	738.73	Concrete	62.13	$ 45,899.67	9.97	$ 8,328.22	10.79	17.80	$ 14,877.74
109	Formwork for 2 - 50 Mg Tank Foundations; curved; width exceeding 1.22m	1.1.1.1	Bldg 4.4.1.1	6.28	2.75	1.75	2.00	60.48	m2	0.52	m2	CEpg192	Unzoned	1.70	53.46	Concrete	62.13	$ 3,321.69	9.97	$ 602.70	10.79	17.80	$ 1,076.68
110	Formwork for 4 - 25 Mg Tank Foundations; curved; width exceeding 1.22m	1.1.1.1	Bldg 4.4.1.1	6.28	2.50	1.50	4.00	94.25	m2	0.52	m2	CEpg192	Unzoned	1.70	83.32	Concrete	62.13	$ 5,176.65	9.97	$ 939.27	10.79	17.80	$ 1,677.94
111	Reinforcement in Tank Foundations (150 Kgs/M3); deformed high yield steel bars in bent and cut lengths; using 16mm nominal size	1.1.1.1	Bldg 4.4.1.2				249.38	249.38	MT	6.15	Tonne	CEpg196	Unzoned	1.70	2,607.22	Concrete	62.13	$ 161,995.43	149.94	$ 37,390.17	682.96	1,126.88	$ 281,015.05
112	Concrete for 19 - 100 Mg Tank Foundations; thickness exceeding 500mm	1.1.1.1	Bldg 4.4.1.1	3.14	12.25	2.00	19.00	1,462.41	m3	0.15	m3	CEpg190/187	Unzoned	1.70	372.91	Concrete	62.13	$ 23,170.51	15.97	$ 23,357.63		225.00	$ 329,042.56
113	Concrete for 2- 50 Mg Tank Foundations; thickness exceeding 500mm	1.1.1.1	Bldg 4.4.1.1	3.14	7.56	1.75	2.00	83.15	m3	0.15	m3	CEpg190/187	Unzoned	1.70	21.20	Concrete	62.13	$ 1,317.50	15.97	$ 1,328.14		225.00	$ 18,709.66
114	Concrete for 4 - 25 Mg Tank Foundations; thickness exceeding 500mm	1.1.1.1	Bldg 4.4.1.1	3.14	6.25	1.50	4.00	117.81	m3	0.15	m3	CEpg190/187	Unzoned	1.70	30.04	Concrete	62.13	$ 1,866.58	15.97	$ 1,881.66		225.00	$ 26,507.19
115	Connection to main inspection pit (600 dia PVC)	1.4.1.8	Bldg 4.4.1.1	50.00				50.00	m				Unzoned	1.70	-	Groundworks	58.54	$ -		$ -		-	$ -
	Inspection chamber							-						-	-		-	$ -		$ -		-	$ -
116	Formwork in Inspection Chamber -Base slab; 250mm thick	1.4.1.8	Bldg 4.4.1.1	10.50		0.30	1.00	3.15	m2	0.38	m2	CEpg193	Unzoned	1.70	2.03	Concrete	62.13	$ 126.44	7.28	$ 22.92	12.86	21.22	$ 66.84
117	Formwork in Inspection Chamber - Walls	1.4.1.8	Bldg 4.4.1.1	10.00		15.00	1.00	150.00	m2	0.48	m2	CEpg193	Unzoned	1.70	122.40	Concrete	62.13	$ 7,605.14	9.21	$ 1,381.05	21.08	34.78	$ 5,217.30
118	Formwork in Inspection Chamber -Walls	1.4.1.8	Bldg 4.4.1.1	11.60		15.00	1.00	174.00	m2	0.48	m2	CEpg193	Unzoned	1.70	141.98	Concrete	62.13	$ 8,821.96	9.21	$ 1,602.02	21.08	34.78	$ 6,052.07
119	Formwork in Inspection Chamber - Top Slab; 250mm thick	1.4.1.8	Bldg 4.4.1.1	2.50	2.50		1.00	6.25	m2	0.38	m2	CEpg193	Unzoned	1.70	4.04	Concrete	62.13	$ 250.86	7.28	$ 45.48	12.86	21.22	$ 132.62
120	Formwork in Inspection Chamber - Top Slab; 250mm thick	1.4.1.8	Bldg 4.4.1.1	11.60		0.30	1.00	3.48	m2	0.38	m2	CEpg193	Unzoned	1.70	2.25	Concrete	62.13	$ 139.68	7.28	$ 25.32	12.86	21.22	$ 73.84
121	Reinforcement in Inspection Chamber (150kgs/m3)	1.4.1.8	Bldg 4.4.1.2				1.00	1.00	MT	6.15	Tonne	CEpg196	Unzoned	1.70	10.46	Concrete	62.13	$ 649.61	149.94	$ 149.94	682.96	1,126.88	$ 1,126.88
122	Concrete in Inspection Chamber - Blinding; 150-300mm thick	1.4.1.8	Bldg 4.4.1.1	2.60	2.60	0.20	1.00	1.35	m3	0.16	m3	CEpg189/187	Unzoned	1.70	0.37	Concrete	62.13	$ 22.85	3.27	$ 4.42		225.00	$ 304.20
123	Concrete in Inspection Chamber - Base Slab; 250mm thick	1.4.1.8	Bldg 4.4.1.1	2.60	2.60	0.25	1.00	1.69	m3	0.18	m3	CEpg190/187	Unzoned	1.70	0.52	Concrete	62.13	$ 32.13	19.06	$ 32.21		225.00	$ 380.25
124	Concrete in Inspection Chamber - Walls	1.4.1.8	Bldg 4.4.1.1	2.90	0.25	15.00	2.00	21.75	m3	0.22	m3	CEpg190/187	Unzoned	1.70	8.13	Concrete	62.13	$ 505.42	23.30	$ 506.73		225.00	$ 4,893.75
125	Concrete in Inspection Chamber - Walls	1.4.1.8	Bldg 4.4.1.1	2.50	0.25	15.00	2.00	18.75	m3	0.22	m3	CEpg190/187	Unzoned	1.70	7.01	Concrete	62.13	$ 435.71	23.30	$ 436.84		225.00	$ 4,218.75
126	Concrete in Inspection Chamber - Top Slab	1.4.1.8	Bldg 4.4.1.1	2.90	2.90	0.25	1.00	2.10	m3	0.18	m3	CEpg190/187	Unzoned	1.70	0.64	Concrete	62.13	$ 39.97	19.06	$ 40.07		225.00	$ 473.06

DNGS Heavy Water Management Building - Construction Cost Estimate

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Ref	Item	NRM Ref	PBS	Quantity L [m]	W [m]	H [m]	Nr [each]	Qty	Unit	Labour Norm Hrs/unit	Norm Unit	Norm Ref	Zone	Productivity [multiplier]	DFL Hours [Hrs]	Crew	Crew Rate [$/hr]	Labour Total [$]	Construction Equipment Rate [$/unit]	Equipment Total [$]	Materials Rate [GBP/unit]	Rate [CAD$/unit]	Material Total [$]
	Basement Walls							-						-	-		-	$ -		$ -		-	$ -
127	Formwork in Dike wall Foundations; rough finish; plane vertical; width exceeding 1.22m	1.3.1.1	Bldg 4.4.1.1	21.50	1.50	2.00	1.00	64.50	m2	0.47	m2	CEpg192	Unzoned	1.70	51.54	Concrete	62.13	$ 3,202.08	9.14	$ 589.59	9.47	15.63	$ 1,007.84
128	Formwork in Dike wall Foundations; rough finish; plane vertical; width exceeding 1.22m	1.3.1.1	Bldg 4.4.1.1	47.00	1.50	2.00	1.00	141.00	m2	0.47	m2	CEpg192	Unzoned	1.70	112.66	Concrete	62.13	$ 6,999.90	9.14	$ 1,288.88	9.47	15.63	$ 2,203.20
129	Concrete in Dike wall Foundations; thickness exceeding 500mm	1.3.1.1	Bldg 4.4.1.1	24.50	2.00	1.50	2.00	147.00	m3	0.15	m3	CEpg190/187	Unzoned	1.70	37.49	Concrete	62.13	$ 2,329.07	15.97	$ 2,347.88		225.00	$ 33,075.00
130	Concrete in Dike wall Foundations; thickness exceeding 500mm	1.3.1.1	Bldg 4.4.1.1	47.00	2.00	1.50	2.00	282.00	m3	0.15	m3	CEpg190/187	Unzoned	1.70	71.91	Concrete	62.13	$ 4,468.02	15.97	$ 4,504.10		225.00	$ 63,450.00
131	Formwork in Dike wall	1.3.1.1	Bldg 4.4.1.1	21.50	2.00	13.00	1.00	559.00	m2	0.48	m2	CEpg193	Unzoned	1.70	456.14	Concrete	62.13	$ 28,341.82	9.21	$ 5,146.71	21.08	34.78	$ 19,443.14
132	Formwork in Dike wall	1.3.1.1	Bldg 4.4.1.1	47.00	2.00	13.00	1.00	1,222.00	m2	0.48	m2	CEpg193	Unzoned	1.70	997.15	Concrete	62.13	$ 61,956.54	9.21	$ 11,250.95	21.08	34.78	$ 42,503.60
133	Reinforcement in Walls/Dikes (@120kgs/M3)	1.3.1.1	Bldg 4.4.1.2				1.00	420.00	MT	6.15	Tonne	CEpg196	Unzoned	1.70	4,391.10	Concrete	62.13	$ 272,834.41	149.94	$ 62,972.91	682.96	1,126.88	$ 473,288.51
134	Concrete in Dike wall	1.3.1.1	Bldg 4.4.1.1	24.50	1.50	13.00	2.00	955.50	m3	0.22	m3	CEpg190/187	Unzoned	1.70	357.36	Concrete	62.13	$ 22,203.84	23.30	$ 22,261.24		225.00	$ 214,987.50
135	Concrete in Dike wall	1.3.1.1	Bldg 4.4.1.1	47.00	1.50	13.00	2.00	1,833.00	m3	0.22	m3	CEpg190/187	Unzoned	1.70	685.54	Concrete	62.13	$ 42,595.12	23.30	$ 42,705.23		225.00	$ 412,425.00
	Concrete Ancillaries							-						-	-		-	$ -		$ -		-	$ -
136	Step ladders inside Inspection Chamber	1.4.1.8	Bldg 4.4.3.3				50.00	50.00	nr		nr	CEpg228	Unzoned	1.70	-	Concrete	62.13	$ -		$ -		-	$ -
137	Manhole cover to inspection chamber; Complete with frame; Bed and set in concrete; access cover and frame	1.4.1.8	Bldg 4.4.3.3				1.00	1.00	nr		nr	CEpg228	Unzoned	1.70	-	Concrete	62.13	$ -		$ -		-	$ -
138	Rock anchors; 25mm diameter; 2m length; including drilling, steel and grout	1.4.1.9	Bldg 4.4.1.2				12.00	12.00	nr		nr	CEpg154/MEpg652	Unzoned	1.70	-	Groundworks	58.54	$ -		$ -		-	$ -
139	Rock Anchors 25mm - 2M Deep; including drilling, steel and grout	1.1.1.1	Bldg 4.4.1.2				421.00	421.00	nr		nr	CEpg154/MEpg652	Unzoned	1.70	-	Groundworks	58.54	$ -		$ -		-	$ -
140	Rock anchors 25mm 2M length for Dike wall		Bldg 4.4.1.2				145.00	145.00	nr					-	-	Groundworks	58.54	$ -		$ -		-	$ -
141	Insulation at Basement upto 1.5 M; boards; polystherene standard grade; fixing with adhesive; to walls; 40mm thick		Bldg 4.4.5.1	149.00		2.00	1.00	298.00	m2	0.08	m2	CEpg344	Unzoned	1.70	40.53	Groundworks	58.54	$ 2,372.59		$ -	5.68	9.37	$ 2,792.86
142	Insulation at Loading bay walls; boards; polystherene standard grade; fixing with adhesive; to floors; 40mm thick		Bldg 4.4.5.1	5.50	5.00		1.00	27.50	m2	0.08	m2	CEpg344	Unzoned	1.70	3.74	Groundworks	58.54	$ 218.95		$ -	5.68	9.37	$ 257.73
143	Insulation at Loading bay slab; boards; polystherene standard grade; fixing with adhesive; to walls; 40mm thick		Bldg 4.4.5.1	5.50	1.50		1.00	8.25	m2	0.06	m2	CEpg344	Unzoned	1.70	0.84	Groundworks	58.54	$ 49.26		$ -	7.13	11.76	$ 97.06
144	Trace heating to Loading bay Ramp & slab		Bldg 4.4.5.1	16.00	5.50		1.00	88.00	m2		m2	PP-Ext Str	Unzoned	1.70	-	Electrical Workers	68.23	$ -		$ -		-	$ -
								-						-	-		-	$ -		$ -		-	$ -
	Sub-Total																	**$ 2,206,514.66**		**$ 1,355,592.48**			**$ 2,114,399.86**
	SUPERSTRUCTURE																						
	Insitu concrete walls to first floor							-						-	-		-	$ -		$ -		-	$ -
145	Formwork - wall above Lvl 100.00 - 5 M high external; basic finish; height 3m above floor level	2.5.1.1	Bldg 4.4.1.1	137.00		5.00	2.00	1,370.00	m2	2.04	m2	ARp203	Unzoned	1.70	4,751.16	Concrete	62.13	$ 295,206.20		$ -	9.55	15.76	$ 21,587.78
146	Reinforcement in concrete walls; 120kgs/m3; 12 mm diameter; bent		Bldg 4.4.1.2				20.55	20.55	MT	24.00	tonne	ARp206	Unzoned	1.70	838.44	Concrete	62.13	$ 52,095.21		$ -	504.01	831.62	$ 17,089.72
147	Concrete wall above Lvl 100.00 - 5 M high external; grade C40	2.5.1.1	Bldg 4.4.1.1	137.00	0.25	5.00	1.00	171.25	m3	2.73	m3	ARp199	Unzoned	1.70	794.77	Concrete	62.13	$ 49,381.92		$ -		225.00	$ 38,531.25
148	Formwork Columns (400x400) - wall above Lvl 100.00 -7.8 M high	2.5.1.1	Bldg 4.4.1.1	4.00	0.40	7.80	12.00	149.76	m2	5.10	m2	ARp204	Unzoned	1.70	1,298.42	Concrete	62.13	$ 80,675.33		$ -	7.53	12.42	$ 1,860.69
149	Reinforcement for Columns (400x400) @ 150 kgs/m3; 12mm diameter; bent		Bldg 4.4.1.2				2.25	2.25	MT	24.00	tonne	ARp206	Unzoned	1.70	91.65	Concrete	62.13	$ 5,694.73		$ -	504.01	831.62	$ 1,868.14
150	Columns (400x400) - Concrete wall above Lvl 100.00 - 7.8 M high	2.5.1.1	Bldg 4.4.1.1	0.40	0.40	7.80	12.00	14.98	m3	4.44	m3	ARp199	Unzoned	1.70	113.04	Concrete	62.13	$ 7,023.50		$ -		225.00	$ 3,369.60
151	Concrete topping finishes - Hardeners; Two coats epoxy anti slip floor paint on screeded surfaces	2.2.1.1	Bldg 4.4.1.1	48.50	21.50		1.00	1,042.75	m2	0.25	m2	ARp383	Unzoned	1.70	443.17	Concrete	62.13	$ 27,535.63		$ -	11.54	19.04	$ 19,855.00
	Insitu concrete upper floors - Beams							-						-	-		-	$ -		$ -		-	$ -
152	Formwork for Beams (300x750)	2.2.1.1	Bldg 4.4.1.1	75.00	1.80		1.00	135.00	m2	2.41	m2	ARp204	Unzoned	1.70	553.10	Concrete	62.13	$ 34,365.73		$ -	9.55	15.76	$ 2,127.26
153	Reinforcement in Beams (300x750) @ 200kg/m3	2.2.1.1	Bldg 4.4.1.2	1.00	17.00	0.20	1.00	3.40	MT	24.00	tonne	ARp206	Unzoned	1.70	138.72	Concrete	62.13	$ 8,619.16		$ -	504.01	831.62	$ 2,827.50
154	Concrete in Beams (300x750)	2.2.1.1	Bldg 4.4.1.1	75.00	0.30	0.75	1.00	16.88	m3	4.44	m3	ARp199	Unzoned	1.70	127.37	Concrete	62.13	$ 7,914.10		$ -		225.00	$ 3,796.88
155	35mpa Concrete in Suspended slab at Lvl 107.8 - 300mm thk	2.2.1.1	Bldg 4.4.1.1	660.00	1.00	0.30	1.00	198.00	m3	2.59	m3	ARp199	Unzoned	1.70	871.79	Concrete	62.13	$ 54,167.61		$ -		225.00	$ 44,550.00
156	Formwork in Suspended slab at Lvl 107.8 - 300mm thk	2.2.1.1	Bldg 4.4.1.1	660.00			1.00	660.00	m2	3.34	m2	ARpg202	Unzoned	1.70	3,747.48	Concrete	62.13	$ 232,844.05		$ -	9.34	15.41	$ 10,171.26
157	Formwork (sides) in Suspended slab at Lvl 107.8 - 300mm thk	2.2.1.1	Bldg 4.4.1.1	103.00		0.30	1.00	30.90	m2	3.34	m2	ARpg202	Unzoned	1.70	175.45	Concrete	62.13	$ 10,901.34		$ -	9.34	15.41	$ 476.20
158	Reinforcement in Suspended slab at Lvl 107.8 @ 150kgs/m3	2.2.1.1	Bldg 4.4.1.2				29.70	29.70	MT	24.00	tonne	ARp206	Unzoned	1.70	1,211.76	Concrete	62.13	$ 75,290.89		$ -	504.01	831.62	$ 24,699.01
159	35 mpa Concrete in Beams External at Lvl 107.80 (350x700)	2.2.1.1	Bldg 4.4.1.1	103.00	0.35	0.40	1.00	14.42	m3	4.44	m3	ARp199	Unzoned	1.70	108.84	Concrete	62.13	$ 6,762.74		$ -		225.00	$ 3,244.50
160	35 mpa Concrete in Beams Internal at Lvl 107.80 (350x700)	2.2.1.1	Bldg 4.4.1.1	73.50	0.35	0.40	1.00	10.29	m3	4.44	m3	ARp199	Unzoned	1.70	77.67	Concrete	62.13	$ 4,825.84		$ -		225.00	$ 2,315.25
161	Formwork for Beams External at Lvl 107.80 (350x700)	2.2.1.1	Bldg 4.4.1.1	103.50		0.40	2.00	82.80	m2	2.41	m2	ARp204	Unzoned	1.70	339.23	Concrete	62.13	$ 21,077.65		$ -	9.55	15.76	$ 1,304.72
162	Formwork for Beams Internal at Lvl 107.80 (350x700)	2.2.1.1	Bldg 4.4.1.1	73.50		0.40	2.00	58.80	m2	2.41	m2	ARp204	Unzoned	1.70	240.90	Concrete	62.13	$ 14,968.18		$ -	9.55	15.76	$ 926.54
163	Reinforcement in Beams at Lvl 107.8 @ 150kgs/m3	2.2.1.1	Bldg 4.4.1.2				6.49	6.49	MT	24.00	tonne	ARp206	Unzoned	1.70	264.63	Concrete	62.13	$ 16,442.31		$ -	504.01	831.62	$ 5,393.86
164	35 mpa Concrete in Column footing (1.2x1.2x1.5) 6 ea	2.2.1.1	Bldg 4.4.1.1	1.20	1.20	1.50	6.00	12.96	m3	0.18	m3	CEpg190/187	Unzoned	1.70	3.97	Concrete	62.13	$ 246.41	19.06	$ 246.99		225.00	$ 2,916.00
165	Rock anchors 25mm 2M length for Col footing 9ea/6ftgs	2.2.1.1	Bldg 4.4.1.2				54.00	54.00	nr		nr		Unzoned	1.70	-	Concrete	62.13	$ -		$ -		-	$ -
166	Reinforcement in Col footing at 120kgs/m3	2.2.1.1	Bldg 4.4.1.2				1.56	1.56	MT	24.00	tonne	ARp206	Unzoned	1.70	63.45	Concrete	62.13	$ 3,942.50		$ -	504.01	831.62	$ 1,293.33
167	35 mpa Concrete in Columns (600x600) lvl 87.00 to lvl100.00	2.2.1.1	Bldg 4.4.1.1	0.60	0.60	12.60	6.00	27.22	m3	4.44	m3	ARp199	Unzoned	1.70	205.43	Concrete	62.13	$ 12,763.86		$ -		225.00	$ 6,123.60
168	Formwork for Columns (600x600)	2.2.1.1	Bldg 4.4.1.1	4.00	0.60	12.60	6.00	181.44	m2	5.10	m2	ARp204	Unzoned	1.70	1,573.08	Concrete	62.13	$ 97,741.26		$ -	7.53	12.42	$ 2,254.30
169	Reinforcement in Columns @ 150kgs/m3	2.2.1.1	Bldg 4.4.1.2				4.08	4.08	MT	24.00	tonne	ARp206	Unzoned	1.70	166.56	Concrete	62.13	$ 10,349.08		$ -	504.01	831.62	$ 3,394.99
170	35 mpa Concrete in Columns (450x450) at Lvl 100.00 to Lvl 107.80	2.2.1.1	Bldg 4.4.1.1	0.45	0.45	7.30	6.00	8.87	m3	4.44	m3	ARp199	Unzoned	1.70	66.95	Concrete	62.13	$ 4,159.65		$ -		225.00	$ 1,995.64
171	Formwork for Columns (450x450)	2.2.1.1	Bldg 4.4.1.1	4.00	0.45	7.30	6.00	78.84	m2	5.10	m2	ARp204	Unzoned	1.70	683.54	Concrete	62.13	$ 42,470.91		$ -	7.53	12.42	$ 979.55
172	Reinforcement in Columns @ 150kgs/m3	2.2.1.1	Bldg 4.4.1.2				1.33	1.33	MT	24.00	tonne	ARp206	Unzoned	1.70	54.28	Concrete	62.13	$ 3,372.69		$ -	504.01	831.62	$ 1,106.40
173	Reinforcement at Column locations in Dike walls (ext) @150kgs/m3	2.2.1.1	Bldg 4.4.1.2				4.80	4.80	MT	24.00	tonne	ARp206	Unzoned	1.70	195.84	Concrete	62.13	$ 12,168.22		$ -	504.01	831.62	$ 3,991.76
	Insitu concrete upper floor - Ground floor slab							-						-	-		-	$ -		$ -		-	$ -
174	Formwork for Suspended slab at 100.00	2.2.1.1	Bldg 4.4.1.1	48.50	21.50		1.00	1,042.75	m2	3.34	m2	ARpg202	Unzoned	1.70	5,920.73	Concrete	62.13	$ 367,875.96		$ -	9.34	15.41	$ 16,069.82
175	Reinforcement at Suspended slab at 100.00 (120Kg/m3)	2.2.1.1	Bldg 4.4.1.2	1.00	1.00		44.10	44.10	m2	24.00	tonne	ARp206	Unzoned	1.70	1,799.28	Concrete	62.13	$ 111,795.56		$ -	504.01	831.62	$ 36,674.29

DNGS Heavy Water Management Building - Construction Cost Estimate

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Ref	Item	NRM Ref	PBS	Quantity L [m]	W [m]	H [m]	Nr [each]	Qty	Unit	Labour Norm Hrs/unit	Norm Unit	Norm Ref	Zone	Productivity [multiplier]	DFL Hours [Hrs]	Crew	Crew Rate [$/hr]	Labour Total [$]	Construction Equipment Rate [$/unit]	Equipment Total [$]	Materials Rate [GBP/unit]	Rate [CAD$/unit]	Material Total [$]
176	Concrete in Suspended slab at LVL-100.00; thickness 150-450mm	2.2.1.1	Bldg 4.4.1.1	50.00	24.50	0.30	1.00	367.50	m3	2.59	m3	ARp199	Unzoned	1.70	1,618.10	Concrete	62.13	$ 100,538.37		$ -		225.00	$ 82,687.50
177	Less Concrete at Openings in slab - Elevators/Staircase	2.2.1.1	Bldg 4.4.1.1	1.00	1.00	1.00	1.00	1.00	m3	2.59	m3	ARp199	Unzoned	1.70	4.40	Concrete	62.13	$ 273.57		$ -		225.00	$ 225.00
	Insitu concrete loading bay							-						-	-		-	$ -		$ -		-	$ -
178	Formwork for Ramps to Loading Bay; sloping	5.10.7.1	Bldg 4.4.1.1	1.00	1.00		13.00	13.00	m2	3.72	m2	ARpg202	Unzoned	1.70	82.21	Concrete	62.13	$ 5,108.12		$ -	9.55	15.76	$ 204.85
179	Formwork for Walls & Fdn to Loading Bay	5.10.7.1	Bldg 4.4.1.1	1.00	1.00		34.00	34.00	m2	2.04	m2	ARp203	Unzoned	1.70	117.91	Concrete	62.13	$ 7,326.29		$ -	9.55	15.76	$ 535.76
180	Formwork for Pits at Loading Bay	5.10.7.1	Bldg 4.4.1.1	1.00	1.00		120.00	120.00	m2	2.04	m2	ARp203	Unzoned	1.70	416.16	Concrete	62.13	$ 25,857.48		$ -	9.55	15.76	$ 1,890.90
181	Reinforcement for Loading Bay Walls/Pit/Ramp (120kgs/m3)	5.10.7.1	Bldg 4.4.1.2				120.00	120.00	MT	24.00	tonne	ARp206	Unzoned	1.70	4,896.00	Concrete	62.13	$ 304,205.62		$ -	504.01	831.62	$ 99,793.98
182	Concrete for Ramps to Loading Bay; sloping	5.10.7.1	Bldg 4.4.1.1				43.00	43.00	m3	2.82	m3	ARp199	Unzoned	1.70	206.14	Concrete	62.13	$ 12,808.32		$ -		225.00	$ 9,675.00
183	Concrete for Walls at Loading Bay	5.10.7.1	Bldg 4.4.1.1				8.00	8.00	m3	2.73	m3	ARp199	Unzoned	1.70	37.13	Concrete	62.13	$ 2,306.89		$ -		225.00	$ 1,800.00
184	Concrete for Pits at Loading Bay	5.10.7.1	Bldg 4.4.1.1				31.00	31.00	m3	2.73	m3	ARp199	Unzoned	1.70	143.87	Concrete	62.13	$ 8,939.21		$ -		225.00	$ 6,975.00
	Miscellaneous concrete works							-						-	-		-	$ -		$ -		-	$ -
185	Formwork for Kerb walls at Cleaning at Drum Cleaning areas		Bldg 4.4.1.1	80.00		0.15	2.00	24.00	m2	2.04	m2	ARp203	Unzoned	1.70	83.23	Concrete	62.13	$ 5,171.50		$ -	9.55	15.76	$ 378.18
186	Rebar for Kerb walls at Cleaning at Drum Cleaning areas		Bldg 4.4.1.2				0.29	0.29	MT	24.00	tonne	ARp206	Unzoned	1.70	11.75	Concrete	62.13	$ 730.09		$ -	504.01	831.62	$ 239.51
187	Concrete at Kerb walls at Cleaning at Drum Cleaning areas		Bldg 4.4.1.1	80.00	0.30	0.15	1.00	3.60	m3	2.73	m3	ARp199	Unzoned	1.70	16.71	Concrete	62.13	$ 1,038.10		$ -		225.00	$ 810.00
188	Nosing angle SS at Kerb walls at Cleaning at Drum Cleaning areas; angle section bearers; 90 x 90 x 6mm		Bldg 4.4.3.1	80.00			2.00	160.00	m	0.31	m	ARp412	Unzoned	1.70	84.32	Concrete	62.13	$ 5,239.10		$ -	42.43	70.01	$ 11,201.52
189	Precast concrete at mid landing slab inside Inspection chamber		Bldg 4.4.1.1	3.00	0.75	0.20	8.00	3.60	m2		m2		Unzoned	1.70	-	Concrete	62.13	$ -		$ -		-	$ -
190	Precast concrete cover slab to inspection chamber		Bldg 4.4.1.1				1.00	1.00	nr		nr		Unzoned	1.70	-	Concrete	62.13	$ -		$ -		-	$ -
191	Precast concrete inspection pit; 15m x 2.5m x 2.5m		Bldg 4.4.1.1				15.00	15.00	nr		nr		Unzoned	1.70	-	Concrete	62.13	$ -		$ -		-	$ -
	Structural steel frame							-						-	-		-	$ -		$ -		-	$ -
192	Base plates for Steel frames at Lvl 107.8 (300x300)	2.1.1.1	Bldg 4.4.3.3				18.00	18.00	nr		nr		Unzoned	1.70	-	Structural Steelwork	67.24	$ -		$ -		-	$ -
193	Foundation Bolts 20mm for Steel frames at Lvl 107.8 (300x300)	2.1.1.1	Bldg 4.4.1.2				72.00	72.00	nr		nr		Unzoned	1.70	-	Structural Steelwork	67.24	$ -		$ -		-	$ -
194	Grouting of Base plates (300x300)	2.1.1.1	Bldg 4.4.1.3				18.00	18.00	nr		nr		Unzoned	1.70	-	Structural Steelwork	67.24	$ -		$ -		-	$ -
195	Intumescent painting to Steel Columns; paint fire protection (60 minutes); spray applied	2.1.1.2	Bldg 4.4.5.3	11.00	1.10		12.00	145.20	m2		m2	ARp257	Unzoned	1.70	-	Building works	60.43	$ -		$ -		-	$ -
	Structural Steel frame work Lvl 107.80 to roof (7.2M Height)							-						-	-		-	$ -		$ -			$ -
196	Steel members in frame work (15kgs/sqft)		Bldg 4.4.3.1				110.00	110.00	MT		tonne	ARp134	Unzoned	1.70	-	Structural Steelwork	67.24	$ -		$ -		-	$ -
197	Roof trusses at 115.00m level; Steel roof trusses and beams; thermal and acoustic insulation;aluminum profiled composite cladding	2.3.1.1	Bldg 4.4.3.1				610.00	610.00	m2		m2	ARp135	Unzoned	1.70	-	Structural Steelwork	67.24	$ -		$ -		-	$ -
	Fire protection to structural steelwork							-						-	-		-	$ -		$ -		-	$ -
198	Fire protection to Steel frame	2.1.1.1	Bldg 4.4.5.3				880.00	880.00	m2		m2	ARp257	Unzoned	1.70	-	Building works	60.43	$ -		$ -		-	$ -
199	Fire protection to Steel frame	2.1.1.1	Bldg 4.4.5.3				660.00	660.00	m2		m2	ARp257	Unzoned	1.70	-	Building works	60.43	$ -		$ -		-	$ -
	Hoist gantries							-						-	-		-	$ -		$ -		-	$ -
200	Structural Steel Gantry for Hoists 1 T & 5 T	2.1.1.1	Bldg 4.4.3.2	44.00	220.00		1.00	9,680.00	kg		kg	ARp134	Unzoned	1.70	-	Structural Steelwork	67.24	$ -		$ -		-	$ -
	Insitu concrete upper floors							-						-	-		-	$ -		$ -		-	$ -
201	Surface finish to insitu concrete; Two coats epoxy anti slip floor paint on screeded surfaces	2.2.2.1	Bldg 4.4.1.1	880.00			1.00	880.00	m2	0.25	m2	ARp383	Unzoned	1.70	374.00	Concrete	62.13	$ 23,237.93		$ -	11.54	19.04	$ 16,756.08
	Tank inspection platforms							-						-	-		-	$ -		$ -		-	$ -
202	Open grid flooring for inspection around tanks on 94.00m level	2.1.1.1	Bldg 4.4.3.1				590.00	590.00	m2		m2	ARp354	Unzoned	1.70	-	Structural Steelwork	67.24	$ -		$ -		-	$ -
	Roof structure							-						-	-		-	$ -		$ -		-	$ -
203	Built up Roof at Lvl 115.00m; steel roof trusses and beams; thermal and acoustic insulation; aluminum profiled composite cladding	2.3.1.3	Bldg 4.4.5.1				600.00	600.00	m2		m2	ARp135	Unzoned	1.70	-	Roofers	58.38	$ -		$ -		-	$ -
204	Waterproofing to Roof	2.3.2.1	Bldg 4.4.5.1				720.00	720.00	m2		m2	ARp310	Unzoned	1.70	-	Roofers	58.38	$ -		$ -		-	$ -
205	Waterproofing to openings	2.3.2.1	Bldg 4.4.5.1	16.00			1.00	16.00	m2		m2	ARp310	Unzoned	1.70	-	Roofers	58.38	$ -		$ -		-	$ -
206	Metal Flashings	2.3.2.1	Bldg 4.4.3.1	146.00	1.50		1.00	219.00	m2		m2	ARp310	Unzoned	1.70	-	Roofers	58.38	$ -		$ -		-	$ -
207	Roof anchors SS on roof (6 nrs)		Bldg 4.4.3.1				6.00	6.00	nr		nr			-	-	Structural Steelwork	67.24	$ -		$ -		-	$ -
208	600 x 600 x 2mm plain Cement tiles on roof at pathways c/w spacers & underpads		Bldg 4.4.6.6	0.60	0.60		380.00	136.80	m2		m2	CEpg81	Unzoned	1.70	-	Roofers	58.38	$ -		$ -		-	$ -
	Rainwater goods							-						-	-		-	$ -		$ -		-	$ -
209	Rainwater down take pipes; fixed to backgrounds; including offsets and shoes; 110mm diameter uPVC	2.3.4.2	Bldg 4.4.5.1	15.00			6.00	90.00	m		m	ARp135	Unzoned	1.70	-	Roofers	58.38	$ -		$ -		-	$ -
	Cladding							-						-	-		-	$ -		$ -		-	$ -
210	Metal cladding External walls at Lvl 105.00 to 107.80; Metal profiled cladding; coated steel profiled cladding on steel rails; insulated and built up system	2.5.1.1	Bldg 4.4.3.4	137.00		3.80	1.00	520.60	m2		m2	ARp140	Unzoned	1.70	-	Cladding	67.62	$ -		$ -		-	$ -
211	Metal cladding External walls at Lvl 107.80 to 115.00; Metal profiled cladding; coated steel profiled cladding on steel rails; insulated and built up system	2.5.1.1	Bldg 4.4.3.4	146.00		7.70	1.00	1,124.20	m2		m2	ARp140	Unzoned	1.70	-	Cladding	67.62	$ -		$ -		-	$ -
212	Metal cladding external walls to staircase above 115.00m level; Metal profiled cladding; coated steel profiled cladding on steel rails; insulated and built up system	2.5.1.1	Bldg 4.4.1.1	18.00		2.80	1.00	50.40	m2		m2	ARp140	Unzoned	1.70	-	Cladding	67.62	$ -		$ -		-	$ -
								-						-	-		-	$ -		$ -		-	$ -
	Sub-Total																	**$ 2,175,458.80**		**$ 246.99**			**$ 515,968.11**
	STAIRCASES																						
213	Light duty metal staircase; galvanised finish; perforated treads; no risers; balustrades and handrails; 3m rise; straight; 900mm wide	2.44.1	Bldg 4.4.3.3				8.00	8.00	nr		nr	ARp138	Unzoned	1.70	-	Structural Steelwork	67.24	$ -		$ -		-	$ -
214	plus for each 300mm variation in storey height	2.44.1	Bldg 4.4.3.3				14.00	14.00	nr		nr	ARp138	Unzoned	1.70	-	Structural Steelwork	67.24	$ -		$ -		-	$ -
215	Light duty spiral metal staircase; galvanised finish; perforated treads; no risers; balustrades and handrails; 3m rise; straight; 900mm wide - Lvl 87.00 to Lvl 94.00 at Platform -Emergency	2.44.1	Bldg 4.4.3.3				2.00	2.00	nr		nr	ARp138	Unzoned	1.70	-	Structural Steelwork	67.24	$ -		$ -		-	$ -

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Ref	Item	NRM Ref	PBS	Quantity L [m]	W [m]	H [m]	Nr [each]	Qty	Unit	Labour Norm Hrs/unit	Norm Unit	Norm Ref	Zone	Productivity [multiplier]	DFL Hours [Hrs]	Crew	Crew Rate [$/hr]	Labour Total [$]	Construction Equipment Rate [$/unit]	Equipment Total [$]	Materials Rate [GBP/unit]	Rate [CAD$/unit]	Material Total [$]
216	plus for each 300mm variation in storey height	2.44.1	Bldg 4.4.3.3				3.00	3.00	nr		nr	ARp138	Unzoned	1.70	-	Structural Steelwork	67.24	$ -		$ -		-	$ -
217	Landing; chequer plate; galvanised; over 300mm wide; 6mm thick	2.44.1	Bldg 4.4.3.3	2.00	2.00		8.00	32.00	m2		m2	ARp354	Unzoned	1.70	-	Structural Steelwork	67.24	$ -		$ -		-	$ -
218	Landing; chequer plate; galvanised; over 300mm wide; 6mm thick	2.44.1	Bldg 4.4.3.3	2.00	4.00		4.00	32.00	m2		m2	ARp354	Unzoned	1.70	-	Structural Steelwork	67.24	$ -		$ -		-	$ -
								-						-	-		-	$ -		$ -		-	$ -
	Sub-Total																	**$ -**		**$ -**			**$ -**
	WINDOWS AND EXTERNAL DOORS																						
219	Aluminium Windows (Offices); standard windows; anodised finish; double glazed	2.6.1.1	Bldg 4.4.6.2-O	1.50		1.50	10.00	22.50	m2		m2	ARp142	Unzoned	1.70	-	Building works	60.43	$ -		$ -		-	$ -
220	Aluminium Windows (Drum Handling); standard windows; anodised finish; double glazed	2.6.1.1	Bldg 4.4.6.2	1.50		1.50	6.00	13.50	m2		m2	ARp142	Unzoned	1.70	-	Building works	60.43	$ -		$ -		-	$ -
221	Aluminium Windows (HVAC Rm); standard windows; anodised finish; double glazed	2.6.1.1	Bldg 4.4.6.2	1.50		1.50	6.00	13.50	m2		m2	ARp142	Unzoned	1.70	-	Building works	60.43	$ -		$ -		-	$ -
222	Aluminium Windows (Roof); standard windows; anodised finish; double glazed	2.6.1.1	Bldg 4.4.6.2	1.50		1.50	2.00	4.50	m2		m2	ARp142	Unzoned	1.70	-	Building works	60.43	$ -		$ -		-	$ -
223	Exterior Doors c/w Frame door; single external steel door, including frame, ironmongery, powder coated finish	2.6.2.1	Bldg 4.4.6.1				6.00	6.00	nr		nr	ARp141	Unzoned	1.70	-	Building works	60.43	$ -		$ -		-	$ -
224	Rolling Shutters and collapsible gtes; galvanised steel; 1 hr fire resisting; self coiling; activated by fusible link; fixing with bolts; 2400 mm x 2750 mm	2.6.1.3	Bldg 4.4.6.1				2.00	2.00	nr		nr	ARp346	Unzoned	1.70	-	Building works	60.43	$ -		$ -		-	$ -
								-						-	-		-	$ -		$ -		-	$ -
	Sub-Total																	**$ -**		**$ -**			**$ -**
	INTERNAL WALLS AND PARTITIONS																						
	Internal walls and partitions							-						-	-		-	$ -		$ -		-	$ -
225	Concrete filled Hollow Block Masonry 200mm(Offices)	2.7.1.1	Bldg 4.4.2.2-O	46.50		7.80	1.00	362.70	m2	0.56	m2	ARp230	Unzoned	1.70	345.29	Masonry	61.49	$ 21,231.91		$ -	20.56	33.92	$ 12,304.23
226	Concrete filled Hollow Block Masonry 200mm(Clean up Rm)	2.7.1.1	Bldg 4.4.2.2	23.00		7.80	1.00	179.40	m2	0.56	m2	ARp230	Unzoned	1.70	170.79	Masonry	61.49	$ 10,501.80		$ -	20.56	33.92	$ 6,085.97
227	Hollow Block Masonry 150 mm(HVAC/Elec))	2.7.1.1	Bldg 4.4.2.2	43.00		7.20	1.00	309.60	m2	0.20	m2	CEpg488	Unzoned	1.70	105.26	Masonry	61.49	$ 6,472.68	2.64	$ 817.34	14.96	24.68	$ 7,642.17
228	GWB on side of Block Masonry inside office; Metal stud and plasterboard partitions; 90mm thick; 1 layer 13mm board each side; tape and fill joints; emulsion finish	2.7.1.1	Bldg 4.4.3.5-O	52.50		3.30	1.00	173.25	m2		m2	ARp142	Unzoned	1.70	-	Building works	60.43	$ -		$ -		-	$ -
229	GWB (Acoustic) wall inside office; Metal stud and plasterboard partitions; 90mm thick; 1 layer 13mm board each side; tape and fill joints; emulsion finish	2.7.1.1	Bldg 4.4.3.5-O	46.50		3.50	1.00	162.75	m2		m2	ARp143	Unzoned	1.70	-	Building works	60.43	$ -		$ -		-	$ -
230	Metal Stud Cement Board walls (Washroom)	2.7.1.1	Bldg 4.4.3.3-O	23.50		3.30	1.00	77.55	m2		m2	ARp143	Unzoned	1.70	-	Building works	60.43	$ -		$ -		-	$ -
231	Hollow Block Masonry 150mm in Battery room (UPS system)	2.7.1.1	Bldg 4.4.2.2	14.00		3.50	1.00	49.00	m2	0.20	m2	CEpg488	Unzoned	1.70	16.66	Masonry	61.49	$ 1,024.42	2.64	$ 129.36	14.96	24.68	$ 1,209.52
	Surface finishes to internal walls and partitions							-						-	-		-	$ -		$ -		-	$ -
232	Masonry wall Finishes; Two coats emulsion paint finish	3.1.1.1	Bldg 4.4.6.6				1,439.00	1,439.00	m2	0.21	m2	ARp380	Unzoned	1.70	513.72	Building works	60.43	$ 31,044.64		$ -	1.02	1.68	$ 2,421.84
233	GWB Wall Finishes	3.1.1.1	Bldg 4.4.6.15-O				654.00	654.00	m2	0.40	m2	ARp380	Unzoned	1.70	444.72	Building works	60.43	$ 26,874.74		$ -	3.19	5.26	$ 3,442.33
234	Finishes to Concrete walls	3.1.1.1	Bldg 4.4.6.6				3,286.00	3,286.00	m2	0.21	m2	ARp380	Unzoned	1.70	1,173.10	Building works	60.43	$ 70,891.38		$ -	1.02	1.68	$ 5,530.34
235	Epoxy painting to walls at Storage area		Bldg 4.4.6.6	137.00		13.00	1.00	1,781.00	m2	0.25	m2	ARp383	Unzoned	1.70	756.93	Concrete	62.13	$ 47,030.40		$ -	11.54	19.04	$ 33,912.02
236	Ceramic to walls at Washrooms (male & female)		Bldg 4.4.6.15-O	18.00		2.20	1.00	39.60	m2	0.56	m2	ARp371	Unzoned	1.70	37.70	Building Works	60.43	$ 2,278.19		$ -	13.85	22.85	$ 904.96
237	Ceramic to walls at Washrooms (male & female)		Bldg 4.4.6.15-O	5.00		2.20	1.00	11.00	m2	0.56	m2	ARp371	Unzoned	1.70	10.47	Building Works	60.43	$ 632.83		$ -	13.85	22.85	$ 251.38
238	Ceramic to walls at Washrooms (male & female)		Bldg 4.4.6.15-O	1.00		2.20	1.00	2.20	m2	0.56	m2	ARp371	Unzoned	1.70	2.09	Building Works	60.43	$ 126.57		$ -	13.85	22.85	$ 50.28
								-						-	-		-	$ -		$ -			$ -
	2.8 INTERNAL DOORS							-						-	-		-	$ -		$ -			$ -
239	Internal Doors c/w Frames (Offices); Standard softwood doors and hardwood frames; including lintel; ironmongery and painting; flush; solid core; hardwood faced	2.8.1.2	Bldg 4.4.6.1-O				5.00	5.00	nr		nr	ARp142	Unzoned	1.70	-	Building works	60.43	$ -		$ -		-	$ -
240	Internal Doors c/w Frames (Washroom); Standard softwood doors and hardwood frames; including lintel; ironmongery and painting; flush; solid core; single leaf	2.8.1.1	Bldg 4.4.6.1-O				2.00	2.00	nr		nr	ARp142	Unzoned	1.70	-	Building works	60.43	$ -		$ -		-	$ -
241	Internal Doors c/w Frames (HVAC); Softwood doors and hardwood frames; including lintel; ironmongery, painting and polishing solid core; heavy duty; single leaf	2.8.1.2	Bldg 4.4.6.1				4.00	4.00	nr		nr	ARp142	Unzoned	1.70	-	Building works	60.43	$ -		$ -		-	$ -
242	Fire Resistant doors c/w Frames; Softwood doors and hardwood frames; including lintel; ironmongery, painting and polishing flush; 1 hr fire resisting; single leaf	2.8.1.2	Bldg 4.4.6.1				4.00	4.00	nr		nr	ARp142	Unzoned	1.70	-	Building works	60.43	$ -		$ -		-	$ -
243	Internal Doors c/w Frames (Clean up room); Softwood doors and hardwood frames; including lintel; ironmongery, painting and polishing solid core; heavy duty; single leaf	2.8.1.2	Bldg 4.4.6.1				2.00	2.00	nr		nr	ARp142	Unzoned	1.70	-	Building works	60.43	$ -		$ -		-	$ -
244	New door for Access to new building from Exstg Bldg; Softwood doors and hardwood frames; including lintel; ironmongery, painting and polishing flush; 1 hr fire resisting; single leaf	2.8.1.2	Bldg 4.4.6.1				3.00	3.00	nr		nr	ARp142	Zone 3	2.33	-	Building works	60.43	$ -		$ -		-	$ -
245	Automatic door; magnetic locks	2.8.1.2	Bldg 4.4.6.1				18.00	18.00	nr				Unzoned	1.70	-	Building works	60.43	$ -		$ -		-	$ -
								-						-	-		-	$ -		$ -			$ -
	Internal floor finishes							-						-	-		-	$ -		$ -		-	$ -
246	Cement and sand (1:3) screeds; 50mm thick		Bldg 4.4.6.3				100.00	100.00	m2		m2	ARp358	Unzoned	1.70	-	Building works	60.43	$ -		$ -		-	$ -
247	Two coats of epoxy anti-slip floor paint on screed		Bldg 4.4.6.3				100.00	100.00	m2		m2	ARp145	Unzoned	1.70	-	Building works	60.43	$ -		$ -		-	$ -
248	Cement and sand (1:3) screeds; 50mm thick		Bldg 4.4.6.3				530.00	530.00	m2		m2	ARp358	Unzoned	1.70	-	Building works	60.43	$ -		$ -		-	$ -
249	Two coats of epoxy anti-slip floor paint on screed		Bldg 4.4.6.3				530.00	530.00	m2		m2	ARp145	Unzoned	1.70	-	Building works	60.43	$ -		$ -		-	$ -
250	Cement and sand (1:3) screeds; 50mm thick		Bldg 4.4.6.3-O				200.00	200.00	m2		m2	ARp358	Unzoned	1.70	-	Building works	60.43	$ -		$ -		-	$ -
251	Heavy duty carpet tiles; to cement and sand base - (Offices)		Bldg 4.4.6.3-O				200.00	200.00	m2	0.28	m2	ARp377	Unzoned	1.70	95.20	Flooring	63.61	$ 6,055.96		$ -	19.22	31.71	$ 6,342.60
252	Cement and sand (1:3) screeds; 50mm thick		Bldg 4.4.6.3-O				50.00	50.00	m2		m2	ARp358	Unzoned	1.70	-	Building works	60.43	$ -		$ -		-	$ -

DNGS Heavy Water Management Building - Construction Cost Estimate

1.65

Ref	Item	NRM Ref	PBS	Quantity L [m]	W [m]	H [m]	Nr [each]	Qty	Unit	Labour Norm Hrs/unit	Norm Unit	Norm Ref	Zone	Productivity [multiplier]	DFL Hours [Hrs]	Crew	Crew Rate [$/hr]	Labour Total [$]	Construction Equipment Rate [$/unit]	Equipment Total [$]	Materials Rate [GBP/unit]	Rate [CAD$/unit]	Material Total [$]
253	Glazed ceramic floor tile; anti-slip tiles		Bldg 4.4.6.3-O				50.00	50.00	m2		m2	ARp146	Unzoned	1.70	-	Building works	60.43	$ -		$ -		-	$ -
254	Line painting to Floors	3.2.1.6	Bldg 4.4.6.3	300.00			1.00	300.00	m	0.04	m2	ARp434	Unzoned	1.70	20.40	Building works	60.43	$ 1,232.79		$ -	0.19	0.31	$ 94.05
255	Cement and sand (1:3) screeds; 50mm thick		Bldg 4.4.6.3				600.00	600.00	m2		m2	ARp358	Unzoned	1.70	-	Building works	60.43	$ -		$ -		-	$ -
256	Two coats of epoxy anti-slip floor paint on screed		Bldg 4.4.6.3				600.00	600.00	m2		m2	ARp145	Unzoned	1.70	-	Building works	60.43	$ -		$ -		-	$ -
257	Cement and sand (1:3) screeds; 50mm thick		Bldg 4.4.6.3				1,010.00	1,010.00	m2		m2	ARp358	Unzoned	1.70	-	Building works	60.43	$ -		$ -		-	$ -
258	Two coats of epoxy anti-slip floor paint on screed		Bldg 4.4.6.3				1,010.00	1,010.00	m2		m2	ARp145	Unzoned	1.70	-	Building works	60.43	$ -		$ -		-	$ -
	Ceiling finishes							-						-	-		-	$ -		$ -		-	$ -
259	Paints to ceilings (Storage); two coats emulsion paint	3.3.1.1	Bldg 4.4.6.4				1,010.00	1,010.00	m2		m2	ARp146	Unzoned	1.70	-	Building works	60.43	$ -		$ -		-	$ -
260	Paints to ceilings; two coats emulsion paint	3.3.1.1	Bldg 4.4.6.4				600.00	600.00	m2		m2	ARp147	Unzoned	1.70	-	Building works	60.43	$ -		$ -		-	$ -
261	Acoustic ceilings to Offices on anti vibration mounting	3.3.3.1	Bldg 4.4.6.4-O				250.00	250.00	m2		m2	ARp147	Unzoned	1.70	-	Building works	60.43	$ -		$ -		-	$ -
								-						-	-		-	$ -		$ -		-	$ -
	Sub-Total																	**$ 225,398.30**		**$ 946.70**			**$ 80,191.67**
	ELEVATORS, LIFTS AND HOISTS																						
262	Dock Levellers (Elec Operated)	5.10.7.1	Bldg 4.4.6.7				2.00	2.00	nr				Unzoned	1.70	-	Building works	60.43	$ -		$ -		-	$ -
263	Rubber Bumpers on Wall at Loading Bay	5.10.7.1	Bldg 4.4.6.7				8.00	8.00	nr				Unzoned	1.70	-	Building works	60.43	$ -		$ -		-	$ -
264	Temporary prefabricated Loading dock (use during construction)		Bldg 4.4.6.7				1.00	1.00	Item				Unzoned	1.70	-	Building Works	60.43	$ -		$ -		-	$ -
								-						-	-		-	$ -		$ -		-	$ -
	Sub-Total																	**$ -**		**$ -**			**$ -**
	BUILDING SERVICES																						
	Sanitary appliances							-						-	-		-	$ -		$ -		-	$ -
265	Washroom Accessories (complete Male/Fe/HC)	5.1.1.1	Bldg 4.4.6.14-O				1.00	1.00	item				Unzoned	1.70	-	Plumbers	66.47	$ -		$ -		-	$ -
	Disposal equipment							-						-	-		-	$ -		$ -		-	$ -
266	Garbage/Recycling Equipment	5.3.3.1	Bldg 4.4.6.14-O				1.00	1.00	nr		nr	ARp155	Unzoned	1.70	-	Building works	60.43	$ -		$ -		-	$ -
	Water installations							-						-	-		-	$ -		$ -		-	$ -
267	Hot and cold water installations; complete installation		Bldg 4.2.1.4				250.00	250.00	m2		m2	ARp149	Unzoned	1.70	-	Plumbers	66.47	$ -		$ -		-	$ -
268	Stand alone Demineralized water tank on Metal stand (1000 gallons Cap)		Bldg 4.2.6.2				1.00	1.00	item				Unzoned	1.70	-	Building works	60.43	$ -		$ -		-	$ -
	Water installations							-						-	-		-	$ -		$ -			$ -
269	Water Heater 100 litres		Bldg 4.2.6.2	1.00			2.00	2.00	nr	2.00	nr	MEpg238	Unzoned	1.70	6.80	Plumbers	66.47	$ 452.00		$ -	957.44	1,579.78	$ 3,159.55
	Uninterruptible Power Supply							-						-	-		-	$ -		$ -			$ -
270	Static UPS including Control panel & Batteries for 500 KVA @ $495/KVA		Bldg 4.1.1.5				500.00	500.00	kVA		KVA		Unzoned	1.70	-	Electrical Workers	68.23	$ -		$ -		-	$ -
271	Inverter Panels		Bldg 4.1.1.5				2.00	2.00	nr		nr		Unzoned	1.70	-	Electrical Workers	68.23	$ -		$ -		-	$ -
272	Battery Racks		Bldg 4.1.1.5				2.00	2.00	nr		nr		Unzoned	1.70	-	Electrical Workers	68.23	$ -		$ -		-	$ -
								-						-	-		-	$ -		$ -			$ -
	ELECTRICAL							-						-	-		-	$ -		$ -			$ -
273	Sub Station (prefabricated) @ $45,000		Bldg 4.1.1.1				1.00	1.00	item				Unzoned	1.70	-	Building works	60.43	$ -		$ -		-	$ -
								-					Unzoned	1.70	-		-	$ -		$ -			$ -
274	Transformer - 1000 KVA		Bldg 4.1.1.1				1.00	1.00	item				Unzoned	1.70	-	Electrical Workers	68.23	$ -		$ -		-	$ -
275	Transformer - 1500 KVA		Bldg 4.1.1.1				1.00	1.00	item				Unzoned	1.70	-	Electrical Workers	68.23	$ -		$ -		-	$ -
276	Transformer - 2000 KVA		Bldg 4.1.1.1				1.00	1.00	item				Unzoned	1.70	-	Electrical Workers	68.23	$ -		$ -		-	$ -
								-					Unzoned	1.70	-		-	$ -		$ -			$ -
277	Standby Generator (Diesel powered) 1000 KVA @ $350,000		Bldg 4.1.2.1				1.00	1.00	item				Unzoned	1.70	-	Electrical Workers	68.23	$ -		$ -		-	$ -
								-					Unzoned	1.70	-		-	$ -		$ -			$ -
278	Ring Main Unit 11 kv including Electrical terminations @ $29,700		Bldg 4.1.1.1				3.00	3.00	nr				Unzoned	1.70	-	Electrical Workers	68.23	$ -		$ -		-	$ -
								-					Unzoned	1.70	-		-	$ -		$ -			$ -
279	Lighting and power installation - Offices 250m2 -		Bldg 4.1.5.3-O				250.00	250.00	m2		m2	ARpg150	Unzoned	1.70	-	Electrical Workers	68.23	$ -		$ -		-	$ -
280	Electrical Installation - Storage Area - 1010 m2 - Lighting Installation		Bldg 4.1.5.2				1,010.00	1,010.00	m2		m2	ARpg150	Unzoned	1.70	-	Electrical Workers	68.23	$ -		$ -		-	$ -
281	Electrical Installation - Facility/Clean up/Drum Handling-630 m2		Bldg 4.1.5.2				630.00	630.00	m2		m2	ARpg150	Unzoned	1.70	-	Electrical Workers	68.23	$ -		$ -		-	$ -
282	Electrical Installation -HVAC /Electrical Rm - 600 m2 - Lighting Installation		Bldg 4.1.5.2				600.00	600.00	m2		m2	ARpg150	Unzoned	1.70	-	Electrical Workers	68.23	$ -		$ -		-	$ -
283	Lightening Arrestor (c/w earthing wire, copper rods)		Bldg 4.1.5.2				1.00	1.00	item		item		Unzoned	1.70	-	Electrical Workers	68.23	$ -		$ -		-	$ -
								-						-	-		-	$ -		$ -			$ -
	Space Heating & Air Treatment							-						-	-		-	$ -		$ -			$ -
284	Heating - Offices - 250 m2		Bldg 4.2.1.10-O				250.00	250.00	m2				Unzoned	1.70	-	Pipefitters	69.11	$ -		$ -		-	$ -
285	Cooling - Offices - 250 m2		Bldg 4.2.1.10-O				250.00	250.00	m2				Unzoned	1.70	-	Pipefitters	69.11	$ -		$ -		-	$ -
286	Ductwork - Offices - 250 m2		Bldg 4.2.1.10-O				250.00	250.00	m2				Unzoned	1.70	-	Cladding	67.62	$ -		$ -		-	$ -
								-					Unzoned	1.70	-		-	$ -		$ -			$ -
287	Heating - Storage Area - 1010 m2		PROC 4.2.1.7				1,010.00	1,010.00	m2				Unzoned	1.70	-	Pipefitters	69.11	$ -		$ -		-	$ -
288	BMS System Installation		PROC 4.2.1.7				1,010.00	1,010.00	m2				Unzoned	1.70	-	Pipefitters	69.11	$ -		$ -		-	$ -
								-					Unzoned	1.70	-		-	$ -		$ -			$ -
289	Heating - Facility/Clean up/Drum Handling - 630 m2		PROC 4.2.1.7				630.00	630.00	m2				Unzoned	1.70	-	Pipefitters	69.11	$ -		$ -		-	$ -
290	BMS System Installation		PROC 4.2.1.7				630.00	630.00	m2				Unzoned	1.70	-	Pipefitters	69.11	$ -		$ -		-	$ -
								-					Unzoned	1.70	-		-	$ -		$ -			$ -
291	Heating - HVAC/Elec Rm - 600 m2		PROC 4.2.1.7				600.00	600.00	m2				Unzoned	1.70	-	Pipefitters	69.11	$ -		$ -		-	$ -
292	BMS System Installation		PROC 4.2.1.7				600.00	600.00	m2				Unzoned	1.70	-	Pipefitters	69.11	$ -		$ -		-	$ -
								-						-	-		-	$ -		$ -			$ -
	SPRINKLER INSTALLATION							-						-	-		-	$ -		$ -			$ -
293	Offices - 250 m2		Bldg 4.2.10.3-O				250.00	250.00	m2		m2	MEpg106	Unzoned	1.70	-	Pipefitters	69.11	$ -		$ -		-	$ -
294	Storage Area - 1010 m2		Bldg 4.2.10.1				1,010.00	1,010.00	m2		m2	MEpg106	Unzoned	1.70	-	Pipefitters	69.11	$ -		$ -		-	$ -
295	Facility/Clean up/Drum Handling - 630 m2		Bldg 4.2.10.1				630.00	630.00	m2		m2	MEpg106	Unzoned	-	-	Pipefitters	69.11	$ -		$ -		-	$ -

DNGS Heavy Water Management Building - Construction Cost Estimate

1.65

Ref	Item	NRM Ref	PBS	Quantity L [m]	W [m]	H [m]	Nr [each]	Qty	Unit	Labour Norm Hrs/unit	Norm Unit	Norm Ref	Zone	Productivity [multiplier]	DFL Hours [Hrs]	Crew	Crew Rate [$/hr]	Labour Total [$]	Construction Equipment Rate [$/unit]	Equipment Total [$]	Materials Rate [GBP/unit]	Rate [CAD$/unit]	Material Total [$]
296	HVAC/Elec Rm - 600 m2		Bldg 4.2.10.1				600.00	600.00	m2		m2	MEpg106	Unzoned	1.70	-	Pipefitters	69.11	$ -		$ -		-	$ -
								-						-	-		-	$ -		$ -			$ -
	COMMUNICATION INSTALLATION - Fire/Voice Alarm							-						-	-		-	$ -		$ -			$ -
297	Offices - 250 m2		Bldg 4.1.3.8-O				250.00	250.00	m2		m2	MEpg106	Unzoned	1.70	-	Electrical Workers	68.23	$ -		$ -		-	$ -
298	Storage Area - 1010 m2		Bldg 4.1.3.4				1,010.00	1,010.00	m2		m2	MEpg106	Unzoned	1.70	-	Electrical Workers	68.23	$ -		$ -		-	$ -
299	Facility/Clean up/Drum Handling - 630 m2		Bldg 4.1.3.4				630.00	630.00	m2		m2	MEpg106	Unzoned	1.70	-	Electrical Workers	68.23	$ -		$ -		-	$ -
300	HVAC/Elec Rm - 600 m2		Bldg 4.1.3.4				600.00	600.00	m2		m2	MEpg106	Unzoned	1.70	-	Electrical Workers	68.23	$ -		$ -		-	$ -
								-						-	-		-	$ -		$ -			$ -
	Natural Gas Installation							-						-	-		-	$ -		$ -			$ -
	Not Required							-						-	-		-	$ -		$ -		-	$ -
	Heating, Ventilation and Air Conditioning							-						-	-		-	$ -		$ -		-	$ -
301	Building Management system tie ins for Office building Heating & Cooling system	5.6.1.1	Bldg 4.2.2.7-O				250.00	250.00	m2		m2	ARp149	Unzoned	1.70	-	Pipefitters	69.11	$ -		$ -		-	$ -
302	Main Steam line tie ins from Main Source	5.6.1.1	Bldg 4.2.2.7-O				1.00	1.00	item		item	ARp150	Unzoned	1.70	-	Pipefitters	69.11	$ -		$ -		-	$ -
303	Local ventilation to WC	5.6.1.1	Bldg 4.2.2.7-O				4.00	4.00	nr		m2	ARp149	Unzoned	1.70	-	Pipefitters	69.11	$ -		$ -		-	$ -
304	Ventilation system to toilet areas	5.6.1.1	Bldg 4.2.2.7-O				50.00	50.00	m2		m2	ARp149	Unzoned	1.70	-	Pipefitters	69.11	$ -		$ -		-	$ -
305	Electrical Space Heaters at Storage Area - 1010 M2	5.6.2.1	Bldg 4.2.6.2				4.00	4.00	nr				Unzoned	1.70	-	Electrical Workers	68.23	$ -		$ -		-	$ -
306	Clean Breathing Air System Plant	5.7.1.1	PROC 4.2.1.7				2.00	2.00	nr				Unzoned	1.70	-	Pipefitters	69.11	$ -		$ -		-	$ -
307	Service Air System Plant	5.7.1.1	PROC 4.2.1.7				1.00	1.00	nr				Unzoned	1.70	-	Pipefitters	69.11	$ -		$ -		-	$ -
308	Instrument System Plant (with dessicant air dryer)	5.7.1.1	PROC 4.2.1.7				1.00	1.00	nr				Unzoned	1.70	-	Pipefitters	69.11	$ -		$ -		-	$ -
307	Exhaust Fan with Mech operated Louvers c/w control system	5.7.3.1	Bldg 4.4.6.5				6.00	6.00	nr				Unzoned	1.70	-	Electrical Workers	68.23	$ -		$ -		-	$ -
309	Pre fab Mech Operated Metal Louvres (prefinished)2x3M	5.7.3.1	Bldg 4.4.6.5				6.00	6.00	nr				Unzoned	1.70	-	Pipefitters	69.11	$ -		$ -		-	$ -
	Electrical installations							-						-	-		-	$ -		$ -		-	$ -
310	Electrical Main Junction & Distribution Box	5.8.1.1	Bldg 4.1.1.2				1.00	1.00	item	3.50			Unzoned	1.70	5.95	Electrical Workers	68.23	$ 405.99		$ -	10,234.18	16,886.40	$ 16,886.40
311	Internal LV wiring	5.8.1.1	Bldg 4.1.1.2				490.00	490.00	m	0.20			Unzoned	1.70	166.60	Electrical Workers	68.23	$ 11,367.62		$ -	9.27	15.30	$ 7,494.80
312	Lighting & Fixtures (Office)	5.8.3.1	Bldg 4.1.5.2-O				12.00	12.00	nr				Unzoned	1.70	-	Electrical Workers	68.23	$ -		$ -		-	$ -
313	Lighting & Fixtures (Storage)	5.8.3.1	Bldg 4.1.5.2				20.00	20.00	nr				Unzoned	1.70	-	Electrical Workers	68.23	$ -		$ -		-	$ -
314	Lighting & Fixtures (HVAC room)	5.8.3.1	Bldg 4.1.5.2				8.00	8.00	nr				Unzoned	1.70	-	Electrical Workers	68.23	$ -		$ -		-	$ -
315	Lighting & Fixtures (External)	5.8.3.1	Bldg 4.1.5.2				18.00	18.00	nr				Unzoned	1.70	-	Electrical Workers	68.23	$ -		$ -		-	$ -
316	Special Lighting systems	5.8.4.1	Bldg 4.1.5.2				4.00	4.00	nr				Unzoned	1.70	-	Electrical Workers	68.23	$ -		$ -		-	$ -
317	Way finding Signs (Illuminated)	5.8.4.1	Bldg 4.1.5.2				16.00	16.00	nr				Unzoned	1.70	-	Electrical Workers	68.23	$ -		$ -		-	$ -
								-						-	-		-	$ -		$ -		-	$ -
	Fire and lightening protection							-						-	-		-	$ -		$ -		-	$ -
318	Fire alarms/appliances		Bldg 4.1.6.1	1.00	1.00	1.00	2,500.00	2,500.00	m2				Unzoned	1.70	-	Electrical Workers	68.23	$ -		$ -		-	$ -
319	Lightening protection system	5.11.2.1	Bldg 4.1.6.1	1.00	1.00	1.00	2,500.00	2,500.00	m2				Unzoned	1.70	-	Electrical Workers	68.23	$ -		$ -		-	$ -
320	Fire and Smoke Detectors		Bldg 4.1.6.1				16.00	16.00	nr				Unzoned	1.70	-	Electrical Workers	68.23	$ -		$ -		-	$ -
	Communication, security and control systems							-						-	-		-	$ -		$ -		-	$ -
321	LAN	5.12.1.2	Bldg 4.1.3.5-O				12.00	12.00	nr		nr	PP-WESB	Unzoned	1.70	-	Electrical Workers	68.23	$ -		$ -		-	$ -
322	Internal Communication system; Telecommunication System	5.12.1.1	Bldg 4.1.3.1				1.00	2,490.00	m2		m2	PP-WESB	Unzoned	1.70	-	Electrical Workers	68.23	$ -		$ -		-	$ -
323	Public address system	5.12.1.1	Bldg 4.1.3.1				1.00	2,490.00	m2		m2	PP-WESB	Unzoned	1.70	-	Electrical Workers	68.23	$ -		$ -		-	$ -
324	Central security control devices; Security Systems; Security Lights and lighting system,	5.12.1.1	Bldg 4.1.3.1				1.00	2,490.00	m2		m2	PP-WESB	Unzoned	1.70	-	Electrical Workers	68.23	$ -		$ -		-	$ -
325	TV monitors	5.12.1.14	Bldg 4.1.3.6-O				8.00	8.00	nr				Unzoned	1.70	-	Electrical Workers	68.23	$ -		$ -		-	$ -
326	Surveillance equipment; detectors and alarms	5.12.1.1	Bldg 4.1.3.2				1.00	2,490.00	m2		m2	PP-WESB	Unzoned	1.70	-	Electrical Workers	68.23	$ -		$ -		-	$ -
	Builders work in connection with building services							-						-	-		-	$ -		$ -		-	$ -
327	Cutting and Patching	5.14.1.1	STIE 4.2.11.1				100.00	100.00	nr				Zone 3	2.33	-	Building works	60.43	$ -		$ -		-	$ -
328	Fire & smoke stopping	5.14.1.1	Bldg 4.1.6.1				2,490.00	2,490.00	m2				Unzoned	1.70	-	Building works	60.43	$ -		$ -		-	$ -
329	Ducts/Pipe sleeves/Openings	5.14.1.1	STIE 4.2.11.1				150.00	150.00	nr				Zone 3	2.33	-	Building works	60.43	$ -		$ -		-	$ -
330	Housekeeping pads; 150mm thick	5.14.1.1	Bldg 4.4.1.1	3.00	6.00		15.00	270.00	m2				Unzoned	1.70	-	Concrete	62.13	$ -		$ -		-	$ -
331	Housekeeping pads; 100mm thick	5.14.1.1	Bldg 4.4.1.1	1.50	2.50		10.00	37.50	m2				Unzoned	1.70	-	Concrete	62.13	$ -		$ -		-	$ -
	Ducts for incoming services							-						-	-		-	$ -		$ -		-	$ -
332	Excavation for Duct bank for services (incoming)		SPRP 4.4.7.1	30.00	1.50	1.50	1.00	67.50	m3	0.29	m3	CEpg169	Unzoned	1.70	33.28	Groundworks	58.54	$ 1,948.13	17.79	$ 1,200.62		-	$ -
333	Concrete in blinding for Duct bank for services (incoming)		Bldg 4.4.1.1	30.00	1.00	0.10	1.00	3.00	m3	0.16	m3	CEpg189/187	Unzoned	1.70	0.82	Concrete	62.13	$ 50.70	3.27	$ 9.80	92.91	153.30	$ 459.90
334	Concrete in base slab Duct bank for services (incoming)		Bldg 4.4.1.1	30.00	0.90	0.15	1.00	4.05	m3	0.18	m3	CEpg190/187	Unzoned	1.70	1.24	Concrete	62.13	$ 77.00	19.06	$ 77.18	92.91	153.30	$ 620.87
335	Concrete in walls Duct bank for services (incoming)		Bldg 4.4.1.1	30.00	0.15	1.05	2.00	9.45	m3	0.22	m3	CEpg190/187	Unzoned	1.70	3.53	Concrete	62.13	$ 219.60	23.30	$ 220.17	92.91	153.30	$ 1,448.70
336	Concrete in roof slab Duct bank for services (incoming)		Bldg 4.4.1.1	30.00	0.90	0.15	1.00	4.05	m3	0.18	m3	CEpg190/187	Unzoned	1.70	1.24	Concrete	62.13	$ 77.00	19.06	$ 77.18	92.91	153.30	$ 620.87
337	Formwork in walls Duct bank for services (incoming)		Bldg 4.4.1.1	30.00		1.05	2.00	63.00	m2	2.04	m2	ARp203	Unzoned	1.70	218.48	Concrete	62.13	$ 13,575.18		$ -	9.55	15.76	$ 992.72
338	Formwork for Duct bank for services (incoming)		Bldg 4.4.1.1	30.00		0.75	2.00	45.00	m2	3.34	m2	ARpg202	Unzoned	1.70	255.51	Concrete	62.13	$ 15,875.73		$ -	9.34	15.41	$ 693.50
339	Formwork for roof slab Duct bank for services (incoming)		Bldg 4.4.1.1	30.00		0.75	1.00	22.50	m2	3.34	m2	ARpg202	Unzoned	1.70	127.76	Concrete	62.13	$ 7,937.87		$ -	9.34	15.41	$ 346.75
340	Reinforcement for Duct bank for services (incoming)		Bldg 4.4.1.2				1.00	1.00	MT	24.00	tonne	ARp206	Unzoned	1.70	40.80	Concrete	62.13	$ 2,535.05		$ -	504.01	831.62	$ 831.62
	Tie-ins to existing services							-						-	-		-	$ -		$ -		-	$ -
	Testing and commissioning building services							-						-	-		-	$ -		$ -		-	$ -
341	Testing Telecommunication System;		STIE 4.1.7.4				16.00	16.00	hrs		hrs	PP-WESB	Zone 3	2.33	-	Electrical Workers	68.23	$ -		$ -			$ -
342	Testing Public Address System;		STIE 4.1.7.4				16.00	16.00	hrs		hrs	PP-WESB	Zone 3	2.33	-	Electrical Workers	68.23	$ -		$ -			$ -
343	Testing Fire Detection and Alarm Systems		STIE 4.3.7.2				16.00	16.00	hrs		hrs	PP-WESB	Zone 3	2.33	-	Electrical Workers	68.23	$ -		$ -			$ -
344	Testing Security Systems; Surveillance equipment; detectors		STIE 4.3.7.2				16.00	16.00	hrs		hrs	PP-WESB	Zone 3	2.33	-	Electrical Workers	68.23	$ -		$ -			$ -
345	Testing Security Systems; Surveillance equipment; alarms		STIE 4.3.7.2				16.00	16.00	hrs		hrs	PP-WESB	Zone 3	2.33	-	Electrical Workers	68.23	$ -		$ -			$ -
346	Testing Security Systems; Security Lights and lighting system, in y Nr		STIE 4.1.7.4				16.00	16.00	hrs		hrs	PP-WESB	Zone 3	2.33	-	Electrical Workers	68.23	$ -		$ -			$ -
347	Commissioning Telecommunication System;		STIE 4.1.7.4				32.00	32.00	hrs		hrs	PP-WESB	Zone 3	2.33	-	Electrical Workers	68.23	$ -		$ -			$ -
348	Commissioning Public Address System;		STIE 4.1.7.4				32.00	32.00	hrs		hrs	PP-WESB	Zone 3	2.33	-	Electrical Workers	68.23	$ -		$ -			$ -
349	Commissioning Fire Detection and Alarm Systems		STIE 4.3.7.2				32.00	32.00	hrs		hrs	PP-WESB	Zone 3	2.33	-	Electrical Workers	68.23	$ -		$ -			$ -
350	Commissioning Security Systems; Surveillance equipment; detectors		STIE 4.3.7.2				32.00	32.00	hrs		hrs	PP-WESB	Zone 3	2.33	-	Electrical Workers	68.23	$ -		$ -			$ -
351	Commissioning Security Systems; Surveillance equipment; alarms		STIE 4.3.7.2				32.00	32.00	hrs		hrs	PP-WESB	Zone 3	2.33	-	Electrical Workers	68.23	$ -		$ -			$ -

DNGS Heavy Water Management Building - Construction Cost Estimate

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Ref	Item	NRM Ref	PBS	Quantity L [m]	W [m]	H [m]	Nr [each]	Qty	Unit	Labour Norm Hrs/unit	Norm Unit	Norm Ref	Zone	Productivity [multiplier]	DFL Hours [Hrs]	Crew	Crew Rate [$/hr]	Labour Total [$]	Construction Equipment Rate [$/unit]	Equipment Total [$]	Materials Rate [GBP/unit]	Rate [CAD$/unit]	Material Total [$]
352	Commissioning Security Systems; Security Lights and lighting system, in y Nr		STIE 4.1.7.4				32.00	32.00	hrs		hrs	PP-WESB	Zone 3	2.33	-	Electrical Workers	68.23	$ -		$ -			$ -
353	Specialist Training and Information sharing	5.15.1.1	Bldg 4.4.8.1.3				60.00	60.00	hours	1.00	hrs		Zone 3	2.33	139.80	Electrical Workers	68.23	$ 9,538.97		$ -		-	$ -
								-						-	-		-	$ -		$ -		-	$ -
	Sub-Total																	**$ 64,060.83**		**$ 1,584.96**			**$ 33,555.67**
	MISCELLANEOUS METALWORK																						
354	Railings at Roof top; mild steel balustrade and steel handrail; 1100mm high		Bldg 4.4.3.3	146.00			1.00	146.00	m		m	ARp138	Unzoned	1.70	-	Structural Steelwork	67.24	$ -		$ -		-	$ -
355	Miscellaneous metals (Offices)		Bldg 4.4.3.5-O				1.00	1.00	LS		LS		Unzoned	1.70	-	Structural Steelwork	67.24	$ -		$ -		-	$ -
356	Miscellaneous Mmetals (Building)		Bldg 4.4.3.1				1.00	1.00	LS		LS		Unzoned	1.70	-	Structural Steelwork	67.24	$ -		$ -		-	$ -
								-						-	-		-	$ -		$ -		-	$ -
	Sub-Total																	**$ -**		**$ -**			**$ -**
	INTERNAL FITTINGS, FURNISHINGS AND EQUIPMENT																						
	General fixtures and fittings							-						-	-		-	$ -		$ -		-	$ -
357	Furniture to Offices (18 personnel)		Bldg 4.4.6.13-O				18.00	18.00	people		nr	PP	Unzoned	1.70	-	Building Works	60.43	$ -		$ -		-	$ -
358	Furniture to Conference room and Admin area		Bldg 4.4.6.13-O				1.00	1.00	item				Unzoned	1.70	-	Building Works	60.43	$ -		$ -		-	$ -
359	Window Blinds; 2.0m wide		Bldg 4.4.6.13-O				10.00	10.00	nr	1.45	nr	ARp395	Unzoned	1.70	24.65	Building works	60.43	$ 14,896.17		$ -	109.78	181.14	$ 1,811.37
360	Eye wash Station		Bldg 4.4.6.14-O				2.00	2.00	item			PP	Unzoned	1.70	-	Building works	60.43	$ -		$ -		-	$ -
361	Emergency Shower		Bldg 4.4.6.14-O				2.00	2.00	item			PP	Unzoned	1.70	-	Building works	60.43	$ -		$ -		-	$ -
362	Laboratory Shelving		Bldg 4.4.6.14-O				1.00	1.00	item			PP	Unzoned	1.70	-	Building works	60.43	$ -		$ -		-	$ -
363	Change room station		Bldg 4.4.6.14-O				1.00	1.00	item			PP	Unzoned	1.70	-	Building works	60.43	$ -		$ -		-	$ -
364	Fume hoods - cover at all tanks		Bldg 4.2.2.5				25.00	25.00	nr		nr	PP-DMCDF	Unzoned	1.70	-	Building works	60.43	$ -		$ -		-	$ -
365	Fume hoods @ Drum Cleaning Area		Bldg 4.2.2.5				2.00	2.00	nr		nr	PP-DMCDF	Unzoned	1.70	-	Building works	60.43	$ -		$ -		-	$ -
365	Radiation monitors (Storage area)		Bldg 4.1.9.1				1.00	1.00	nr				Unzoned	1.70	-	Electrical Workers	68.23	$ -		$ -		-	$ -
366	SAM - Small Article Monitor		Bldg 4.1.9.1				1.00	1.00	nr			PP-WESB	Unzoned	1.70	-	Electrical Workers	68.23	$ -		$ -		-	$ -
367	Motion detector		Bldg 4.1.9.1				8.00	8.00	nr			PP-WESB	Unzoned	1.70	-	Electrical Workers	68.23	$ -		$ -		-	$ -
								-						-	-		-	$ -		$ -		-	$ -
	Sub-Total																	**$ 14,896.17**		**$ -**			**$ 1,811.37**
	PROCESS EQUIPMENT																						
	PHT D2O Supply Tanks (8 ea)							-						-	-		-	$ -		$ -		-	$ -
368	Tanks 100 Mg 38110 - SS 304 Class 6		PROC 4.2.5.4				8.00	8.00	nr				Unzoned	1.70	-	Structural Steelwork	67.24	$ -		$ -		-	$ -
369	Tanks 100 Mg 38110 - Installation		PROC 4.2.5.4				8.00	8.00	nr				Unzoned	1.70	-	Structural Steelwork	67.24	$ -		$ -		-	$ -
370	Tanks 100 Mg 38110 - Commissioning		PROC 4.2.5.4				8.00	8.00	nr				Unzoned	1.70	-	Structural Steelwork	67.24	$ -		$ -		-	$ -
371	Pressure sensors		PROC 4.2.1.3				8.00	8.00	nr	6.00			Unzoned	1.70	81.60	Pipefitters	69.11	$ 5,639.62		$ -		517.00	$ 4,136.00
372	Level sensors		PROC 4.2.1.3				16.00	16.00	nr	4.00			Unzoned	1.70	108.80	Pipefitters	69.11	$ 7,519.49		$ -		2,269.00	$ 36,304.00
373	Pressure Gauges		PROC 4.2.1.3				16.00	16.00	nr	4.00			Unzoned	1.70	108.80	Pipefitters	69.11	$ 7,519.49		$ -		1,493.00	$ 23,888.00
374	Piping - S Steel - Inlets - 3 " for 100 Mg Tanks		PROC 4.2.1.1	75.00			8.00	600.00	m	0.58			Unzoned	1.70	586.50	Pipefitters	69.11	$ 40,534.77		$ -		52.15	$ 31,290.00
375	Piping - S Steel - Outlet - 3" for 100 Mg Tanks		PROC 4.2.1.1	75.00			8.00	600.00	m	0.58			Unzoned	1.70	586.50	Pipefitters	69.11	$ 40,534.77		$ -		52.15	$ 31,290.00
376	Switches - 2 level		PROC 4.2.1.3				16.00	16.00	nr	3.50			Unzoned	1.70	95.20	Electrical Workers	68.23	$ 6,495.78		$ -		1,011.00	$ 16,176.00
377	Transmitters - 2 ea		PROC 4.2.1.3				16.00	16.00	nr	4.00			Unzoned	1.70	108.80	Electrical Workers	68.23	$ 7,423.75		$ -		554.00	$ 8,864.00
378	Beetle - Leak Detection - 1 ea		PROC 4.2.1.3				8.00	8.00	nr	4.00			Unzoned	1.70	54.40	Electrical Workers	68.23	$ 3,711.88		$ -		758.00	$ 6,064.00
379	Isolation Valve		PROC 4.2.1.2				8.00	8.00	nr	0.39			Unzoned	1.70	5.30	Pipefitters	69.11	$ 366.58		$ -		2,577.00	$ 20,616.00
380	Data Cables to Control room		Bldg 4.1.3.1	90.00			8.00	720.00	m				Zone 3	2.33	-	Electrical Workers	68.23	$ -		$ -		-	$ -
381	Item-6- Cover gas Vent Control Valve pnuematic control Valve and Accessories		PROC 4.2.1.2				1.00	1.00	nr	0.39			Unzoned	1.70	0.66	Pipefitters	69.11	$ 45.82		$ -		790.00	$ 790.00
382	Item - 8 - Cover Gas Relief Valve		PROC 4.2.1.2				1.00	1.00	nr	0.39			Unzoned	1.70	0.66	Pipefitters	69.11	$ 45.82		$ -		620.00	$ 620.00
383	Item - 9 - Main Outlet Header Isolation Valve		PROC 4.2.1.2				1.00	1.00	nr	0.39			Unzoned	1.70	0.66	Pipefitters	69.11	$ 45.82		$ -		580.00	$ 580.00
384	Item - 11 & 12 - Outlet Isolation Valves		PROC 4.2.1.2				2.00	2.00	nr	0.39			Unzoned	1.70	1.33	Pipefitters	69.11	$ 91.64		$ -		580.00	$ 1,160.00
385	Item - 15 - Main Inlet Header Isolation Valve		PROC 4.2.1.2				1.00	1.00	nr	0.39			Unzoned	1.70	0.66	Pipefitters	69.11	$ 45.82		$ -		580.00	$ 580.00
386	Item 24 & 25 - Inlet Isolation Valve		PROC 4.2.1.2				2.00	2.00	nr	0.39			Unzoned	1.70	1.33	Pipefitters	69.11	$ 91.64		$ -		580.00	$ 1,160.00
387	Item - 26 - Cover Gas Supply Isolation Valve		PROC 4.2.1.2				1.00	1.00	nr	0.39			Unzoned	1.70	0.66	Pipefitters	69.11	$ 45.82		$ -		580.00	$ 580.00
388	Item - 28 - Supply Header Isolation Valve		PROC 4.2.1.2				1.00	1.00	nr	0.39			Unzoned	1.70	0.66	Pipefitters	69.11	$ 45.82		$ -		580.00	$ 580.00
389	Item - 29 - Vacuum Relief Valve		PROC 4.2.1.2				1.00	1.00	nr	4.50			Unzoned	1.70	7.65	Pipefitters	69.11	$ 528.71		$ -		1,271.00	$ 1,271.00
390	Item - 32 - Pressure Transmitter		PROC 4.2.1.3				1.00	1.00	nr	4.00			Unzoned	1.70	6.80	Electrical Workers	68.23	$ 463.98		$ -		517.00	$ 517.00
391	Item 33 & 34 - Level Transmitter		PROC 4.2.1.3				2.00	2.00	nr	3.50			Unzoned	1.70	11.90	Electrical Workers	68.23	$ 811.97		$ -		2,269.00	$ 4,538.00
392	Item-4-Storage Tank Cover Gas Chilled Condenser - Inlet 2", Outlet 2"		PROC 4.2.5.4				2.00	1.00	nr	6.00			Unzoned	1.70	10.20	Pipefitters	69.11	$ 704.95		$ -		-	$ -
393	Main Contractor's mark-up for storage, freight, transportation and profit. Say, 14% of material cost.		PROC 4.2.5.4				1.00	1.00	item				Unzoned	1.70	-	Pipefitters	69.11	$ -		$ -		-	$ -
	Moderator D2O Supply Tanks(7 ea)							-						-	-		-	$ -		$ -			$ -
394	Tanks 100 Mg 38110; SS 304 Class 3		PROC 4.2.5.4				7.00	7.00	nr				Unzoned	1.70	-	Structural Steelwork	67.24	$ -		$ -		-	$ -
395	Tanks 100 Mg 38110 - Installation		PROC 4.2.5.4				7.00	7.00	nr				Unzoned	1.70	-	Structural Steelwork	67.24	$ -		$ -		-	$ -
396	Tanks 100 Mg 38110 - Commissioning		PROC 4.2.5.4				8.00	8.00	nr				Unzoned	1.70	-	Structural Steelwork	67.24	$ -		$ -		-	$ -
397	Valves		PROC 4.2.1.2				14.00	14.00	nr	0.39			Unzoned	1.70	9.28	Pipefitters	69.11	$ 641.51		$ -		-	$ -
398	Pressure sensors		PROC 4.2.1.3				7.00	7.00	nr	6.00			Unzoned	1.70	71.40	Pipefitters	69.11	$ 4,934.67		$ -		517.00	$ 3,619.00
399	Level sensors		PROC 4.2.1.3				14.00	14.00	nr	4.00			Unzoned	1.70	95.20	Pipefitters	69.11	$ 6,579.56		$ -		2,269.00	$ 31,766.00
400	Pressure Gauges		PROC 4.2.1.3				14.00	14.00	nr	4.00			Unzoned	1.70	95.20	Pipefitters	69.11	$ 6,579.56		$ -		1,493.00	$ 20,902.00
401	Piping - S Steel - Inlets - 3 " for 100 Mg Tanks		PROC 4.2.1.1	75.00			7.00	525.00	m	8.00			Unzoned	1.70	7,140.00	Pipefitters	69.11	$ 493,466.82		$ -		52.15	$ 27,378.75
402	Piping - S Steel - Outlet - 3" for 100 Mg Tanks		PROC 4.2.1.1	75.00			7.00	525.00	m	6.00			Unzoned	1.70	5,355.00	Pipefitters	69.11	$ 370,100.12		$ -		52.15	$ 27,378.75
403	Switches - 2 level		PROC 4.2.1.3				14.00	14.00	nr	3.50			Unzoned	1.70	83.30	Electrical Workers	68.23	$ 5,683.81		$ -		1,011.00	$ 14,154.00
404	Transmitters - 2 ea		PROC 4.2.1.3				14.00	14.00	nr	4.00			Unzoned	1.70	95.20	Electrical Workers	68.23	$ 6,495.78		$ -		554.00	$ 7,756.00
405	Beetle - Leak Detection - 1 ea		PROC 4.2.1.3				7.00	7.00	nr	4.00			Unzoned	1.70	47.60	Electrical Workers	68.23	$ 3,247.89		$ -		758.00	$ 5,306.00
406	Isolation Valve		PROC 4.2.1.2				7.00	7.00	nr	0.39			Unzoned	1.70	4.64	Pipefitters	69.11	$ 320.75		$ -		2,577.00	$ 18,039.00
407	Data Cables to Control room		Bldg 4.1.3.1	90.00			7.00	630.00	m	0.39			Zone 3	2.33	572.48	Electrical Workers	68.23	$ 39,062.10		$ -		12.10	$ 7,623.00

DNGS Heavy Water Management Building - Construction Cost Estimate

1.65

Ref	Item	NRM Ref	PBS	Quantity L [m]	W [m]	H [m]	Nr [each]	Qty	Unit	Labour Norm Hrs/unit	Norm Unit	Norm Ref	Zone	Productivity [multiplier]	DFL Hours [Hrs]	Crew	Crew Rate [$/hr]	Labour Total [$]	Construction Equipment Rate [$/unit]	Equipment Total [$]	Materials Rate [GBP/unit]	Rate [CAD$/unit]	Material Total [$]
408	Item-4-Storage Tank Cover Gas Chilled Condenser - Inlet 2", Outlet 2"		PROC 4.2.1.3				2.00	1.00	nr	6.00			Unzoned	1.70	10.20	Pipefitters	69.11	$ 704.95		$ -		-	$ -
409	Item-5-Cover Gas Vent Control Pnuematic Valve & Accessories- 2 "		PROC 4.2.1.2				2.00	1.00	nr	6.00			Unzoned	1.70	10.20	Pipefitters	69.11	$ 704.95		$ -		790.00	$ 790.00
410	Item-7-Cover Gas Relief Valve 2 "		PROC 4.2.1.2				1.00	1.00	nr	0.39			Unzoned	1.70	0.66	Pipefitters	69.11	$ 45.82		$ -		620.00	$ 620.00
411	item-10-Main Outlet Header Isolation Valve 3 "		PROC 4.2.1.2				1.00	1.00	nr	0.39			Unzoned	1.70	0.66	Pipefitters	69.11	$ 45.82		$ -		580.00	$ 580.00
412	Item-13&14- Outlet Isolation Valve - 3 "		PROC 4.2.1.2				2.00	1.00	nr	0.39			Unzoned	1.70	0.66	Pipefitters	69.11	$ 45.82		$ -		580.00	$ 580.00
413	Item - 18 & 19- Inlet Isolation Valve - 2"		PROC 4.2.1.2				2.00	2.00	nr	0.39			Unzoned	1.70	1.33	Pipefitters	69.11	$ 91.64		$ -		460.00	$ 920.00
414	Item - 27 - Cover Gas Supply Isolation Valve - 2"		PROC 4.2.1.2				2.00	2.00	nr	0.39			Unzoned	1.70	1.33	Pipefitters	69.11	$ 91.64		$ -		580.00	$ 1,160.00
415	Item - 30 - Vacuum Relief Valve - 2"		PROC 4.2.1.2				2.00	2.00	nr	4.50			Unzoned	1.70	15.30	Pipefitters	69.11	$ 1,057.43		$ -		1,170.00	$ 2,340.00
416	Item - 31- Pressure Transmitter		PROC 4.2.1.3				1.00	1.00	nr	6.00			Unzoned	1.70	10.20	Electrical Workers	68.23	$ 695.98		$ -		517.00	$ 517.00
417	Item- 35 & 36 - Level Transmitter		PROC 4.2.1.3				2.00	2.00	nr	4.00			Unzoned	1.70	13.60	Electrical Workers	68.23	$ 927.97		$ -		2,269.00	$ 4,538.00
418	Main Contractor's mark-up for storage, freight, transportation and profit. Say, 14% of material cost.		PROC 4.2.5.4				1.00	1.00	item				Unzoned	1.70	-	Pipefitters	69.11	$ -		$ -		-	$ -
	TRF/SUP Feed Tank (2 ea)							-						-	-		-	$ -		$ -			$ -
419	Tanks 100 Mg 38110 SS 304 Class 3		PROC 4.2.5.4				2.00	2.00	nr				Unzoned	1.70	-	Structural Steelwork	67.24	$ -		$ -		-	$ -
420	Tanks 100 Mg 38110 - Installation		PROC 4.2.5.4				2.00	2.00	nr				Unzoned	1.70	-	Structural Steelwork	67.24	$ -		$ -		-	$ -
421	Tanks 100 Mg 38110 - Commissioning		PROC 4.2.5.4				8.00	8.00	nr				Unzoned	1.70	-	Structural Steelwork	67.24	$ -		$ -		-	$ -
422	Valves		PROC 4.2.1.2				4.00	4.00	nr	0.39			Unzoned	1.70	2.65	Pipefitters	69.11	$ 183.29		$ -		-	$ -
423	Pressure sensors		PROC 4.2.1.3				2.00	2.00	nr	6.00			Unzoned	1.70	20.40	Pipefitters	69.11	$ 1,409.91		$ -		517.00	$ 1,034.00
424	Level sensors		PROC 4.2.1.3				4.00	4.00	nr	4.00			Unzoned	1.70	27.20	Pipefitters	69.11	$ 1,879.87		$ -		2,269.00	$ 9,076.00
425	Pressure Gauges		PROC 4.2.1.3				4.00	4.00	nr	4.00			Unzoned	1.70	27.20	Pipefitters	69.11	$ 1,879.87		$ -		1,493.00	$ 5,972.00
426	Piping - S Steel - Inlets - 3 " for 100 Mg Tanks		PROC 4.2.1.1	75.00			2.00	150.00	m	8.00			Unzoned	1.70	2,040.00	Pipefitters	69.11	$ 140,990.52		$ -		52.15	$ 7,822.50
427	Piping - S Steel - Outlet - 3" for 100 Mg Tanks		PROC 4.2.1.1	75.00			2.00	150.00	m	6.00			Unzoned	1.70	1,530.00	Pipefitters	69.11	$ 105,742.89		$ -		52.15	$ 7,822.50
428	Switches - 2 level		PROC 4.2.1.3				4.00	4.00	nr	3.50			Unzoned	1.70	23.80	Electrical Workers	68.23	$ 1,623.95		$ -		1,011.00	$ 4,044.00
429	Transmitters - 2 ea		PROC 4.2.1.3				4.00	4.00	nr	4.00			Unzoned	1.70	27.20	Electrical Workers	68.23	$ 1,855.94		$ -		554.00	$ 2,216.00
430	Beetle - Leak Detection - 1 ea		PROC 4.2.1.3				2.00	2.00	nr	4.00			Unzoned	1.70	13.60	Electrical Workers	68.23	$ 927.97		$ -		758.00	$ 1,516.00
431	Isolation Valve		PROC 4.2.1.2				2.00	2.00	nr	0.39			Unzoned	1.70	1.33	Pipefitters	69.11	$ 91.64		$ -		2,577.00	$ 5,154.00
432	Data Cables to Control room		Bldg 4.1.3.1	90.00			2.00	180.00	m				Zone 3	2.33	-	Electrical Workers	68.23	$ -		$ -		-	$ -
433	Main Contractor's mark-up for storage, freight, transportation and profit. Say, 14% of material cost.		PROC 4.2.5.4				1.00	1.00	item				Unzoned	1.70	-	Pipefitters	69.11	$ -		$ -		-	$ -
	TRF/SUP Product Tank (2 ea)							-						-	-		-	$ -		$ -			$ -
434	Tanks 100 Mg 38110 SS 304 Class 3		PROC 4.2.5.4				2.00	2.00	nr				Unzoned	1.70	-	Structural Steelwork	67.24	$ -		$ -		-	$ -
435	Tanks 100 Mg 38110 - Installation		PROC 4.2.5.4				2.00	2.00	nr				Unzoned	1.70	-	Structural Steelwork	67.24	$ -		$ -		-	$ -
436	Tanks 100 Mg 38110 - Commissioning		PROC 4.2.5.4				8.00	8.00	nr				Unzoned	1.70	-	Structural Steelwork	67.24	$ -		$ -		-	$ -
437	Valves		PROC 4.2.1.2				4.00	4.00	nr	0.39			Unzoned	1.70	2.65	Pipefitters	69.11	$ 183.29		$ -		-	$ -
438	Pressure sensors		PROC 4.2.1.3				2.00	2.00	nr	6.00			Unzoned	1.70	20.40	Pipefitters	69.11	$ 1,409.91		$ -		517.00	$ 1,034.00
439	Level sensors		PROC 4.2.1.3				4.00	4.00	nr	4.00			Unzoned	1.70	27.20	Pipefitters	69.11	$ 1,879.87		$ -		2,269.00	$ 9,076.00
440	Pressure Gauges		PROC 4.2.1.3				4.00	4.00	nr	4.00			Unzoned	1.70	27.20	Pipefitters	69.11	$ 1,879.87		$ -		1,493.00	$ 5,972.00
441	Piping - S Steel - Inlets - 3 " for 100 Mg Tanks		PROC 4.2.1.1	75.00			2.00	150.00	m	8.00			Unzoned	1.70	2,040.00	Pipefitters	69.11	$ 140,990.52		$ -		52.15	$ 7,822.50
442	Piping - S Steel - Outlet - 3" for 100 Mg Tanks		PROC 4.2.1.1	75.00			2.00	150.00	m	6.00			Unzoned	1.70	1,530.00	Pipefitters	69.11	$ 105,742.89		$ -		52.15	$ 7,822.50
443	Switches - 2 level		PROC 4.2.1.3				4.00	4.00	nr	3.50			Unzoned	1.70	23.80	Electrical Workers	68.23	$ 1,623.95		$ -		1,011.00	$ 4,044.00
444	Transmitters - 2 ea		PROC 4.2.1.3				4.00	4.00	nr	4.00			Unzoned	1.70	27.20	Electrical Workers	68.23	$ 1,855.94		$ -		554.00	$ 2,216.00
445	Beetle - Leak Detection - 1 ea		PROC 4.2.1.3				2.00	2.00	nr	4.00			Unzoned	1.70	13.60	Electrical Workers	68.23	$ 927.97		$ -		758.00	$ 1,516.00
446	Isolation Valve		PROC 4.2.1.2				2.00	2.00	nr	0.39			Unzoned	1.70	1.33	Pipefitters	69.11	$ 91.64		$ -		2,577.00	$ 5,154.00
447	Data Cables to Control room		Bldg 4.1.3.1	90.00			2.00	180.00	m				Zone 3	2.33	-	Electrical Workers	68.23	$ -		$ -		-	$ -
448	Main Contractor's mark-up for storage, freight, transportation and profit. Say, 14% of material cost.		PROC 4.2.5.4				1.00	1.00	item				Unzoned	1.70	-	Pipefitters	69.11	$ -		$ -		-	$ -
	Downgraded D2O Tank (2 ea)							-						-	-		-	$ -		$ -			$ -
449	Tanks 50 Mg 38500 SS 304 Class 3		PROC 4.2.5.4				2.00	2.00	nr				Unzoned	1.70	-	Structural Steelwork	67.24	$ -		$ -		-	$ -
450	Tanks 50 Mg 38500 - Installation		PROC 4.2.5.4				2.00	2.00	nr				Unzoned	1.70	-	Structural Steelwork	67.24	$ -		$ -		-	$ -
451	Tanks 50 Mg 38500 - Commissioning		PROC 4.2.5.4				8.00	8.00	nr				Unzoned	1.70	-	Structural Steelwork	67.24	$ -		$ -		-	$ -
452	Valves; 3"		PROC 4.2.1.2				4.00	4.00	nr	0.39	nr		Unzoned	1.70	2.65	Pipefitters	69.11	$ 183.29		$ -		790.00	$ 3,160.00
453	Pressure sensors		PROC 4.2.1.3				2.00	2.00	nr	6.00			Unzoned	1.70	20.40	Pipefitters	69.11	$ 1,409.91		$ -		517.00	$ 1,034.00
454	Level sensors		PROC 4.2.1.3				4.00	4.00	nr	4.00			Unzoned	1.70	27.20	Pipefitters	69.11	$ 1,879.87		$ -		2,269.00	$ 9,076.00
455	Pressure Gauges		PROC 4.2.1.3				4.00	4.00	nr	4.00			Unzoned	1.70	27.20	Pipefitters	69.11	$ 1,879.87		$ -		1,493.00	$ 5,972.00
456	Piping - S Steel - Inlets - 3 " for 100 Mg Tanks		PROC 4.2.1.1	75.00			2.00	150.00	m	8.00			Unzoned	1.70	2,040.00	Pipefitters	69.11	$ 140,990.52		$ -		52.15	$ 7,822.50
457	Piping - S Steel - Outlet - 3" for 100 Mg Tanks		PROC 4.2.1.1	75.00			2.00	150.00	m	6.00			Unzoned	1.70	1,530.00	Pipefitters	69.11	$ 105,742.89		$ -		52.15	$ 7,822.50
458	Switches - 2 level		PROC 4.2.1.3				4.00	4.00	nr	3.50			Unzoned	1.70	23.80	Electrical Workers	68.23	$ 1,623.95		$ -		1,011.00	$ 4,044.00
459	Transmitters - 2 ea		PROC 4.2.1.3				4.00	4.00	nr	4.00			Unzoned	1.70	27.20	Electrical Workers	68.23	$ 1,855.94		$ -		554.00	$ 2,216.00
460	Beetle - Leak Detection - 1 ea		PROC 4.2.1.3				2.00	2.00	nr	4.00			Unzoned	1.70	13.60	Electrical Workers	68.23	$ 927.97		$ -		758.00	$ 1,516.00
461	Isolation Valve		PROC 4.2.1.2				2.00	2.00	nr	0.39			Unzoned	1.70	1.33	Pipefitters	69.11	$ 91.64		$ -		2,577.00	$ 5,154.00
462	Data Cables to Control room		Bldg 4.1.3.1	90.00			2.00	180.00	m				Zone 3	2.33	-	Electrical Workers	68.23	$ -		$ -		-	$ -
463	Item - 38 & 39 - Transfer Pump; including Item 40 & 41 24 HP motor		PROC 4.2.2.4				2.00	2.00	nr	4.00	nr		Unzoned	1.70	13.60	Pipefitters	69.11	$ 939.94		$ -		13,955.00	$ 27,910.00
464	Item - 42 & 43 - Check Valve 1 1/2 "		PROC 4.2.1.2				2.00	2.00	nr	0.39			Unzoned	1.70	1.33	Pipefitters	69.11	$ 91.64		$ -		1,039.00	$ 2,078.00
465	Item - 44 - Main Inlet Header Check valve 1 1/2 "		PROC 4.2.1.2				1.00	1.00	nr	0.39			Unzoned	1.70	0.66	Pipefitters	69.11	$ 45.82		$ -		580.00	$ 580.00
466	Item - 45 - Cover Gas Vent Control Valve pnuematic Control Valve and Accessories 2"		PROC 4.2.1.2				1.00	1.00	nr	0.39			Unzoned	1.70	0.66	Pipefitters	69.11	$ 45.82		$ -		790.00	$ 790.00
467	Item - 46 & 47 - Outlet Control Valve and Accessories 1 1/2"		PROC 4.2.1.2				2.00	2.00	nr	0.39			Unzoned	1.70	1.33	Pipefitters	69.11	$ 91.64		$ -		790.00	$ 1,580.00
468	Item 48 & 49 - Inlet Control Valve Pnuematic Control Valve & Accessories 1 1/2"		PROC 4.2.1.2				2.00	2.00	nr	0.39			Unzoned	1.70	1.33	Pipefitters	69.11	$ 91.64		$ -		790.00	$ 1,580.00
469	Item - 50 - Cover Gas Relief Valve 2 "		PROC 4.2.1.2				1.00	1.00	nr	0.39			Unzoned	1.70	0.66	Pipefitters	69.11	$ 45.82		$ -		620.00	$ 620.00
470	Item 51 & 52 - Relief Valve - 1 1/2 "		PROC 4.2.1.2				2.00	2.00	nr	0.39			Unzoned	1.70	1.33	Pipefitters	69.11	$ 91.64		$ -		620.00	$ 1,240.00
471	Item 53 & 54 - Inlet Isolation Valve 2 1/2"		PROC 4.2.1.2				2.00	2.00	nr	0.39			Unzoned	1.70	1.33	Pipefitters	69.11	$ 91.64		$ -		770.00	$ 1,540.00
472	Item 55 - Cover Gas Supply Isolation Valve 2 "		PROC 4.2.1.2				1.00	1.00	nr	0.39			Unzoned	1.70	0.66	Pipefitters	69.11	$ 45.82		$ -		580.00	$ 580.00
473	Item 56 - Cover Gas Drain Valve 2"		PROC 4.2.1.2				1.00	1.00	nr	0.39			Unzoned	1.70	0.66	Pipefitters	69.11	$ 45.82		$ -		580.00	$ 580.00

DNGS Heavy Water Management Building - Construction Cost Estimate

1.65

Ref	Item	NRM Ref	PBS	Quantity L [m]	W [m]	H [m]	Nr [each]	Qty	Unit	Labour Norm Hrs/unit	Norm Unit	Norm Ref	Zone	Productivity [multiplier]	DFL Hours [Hrs]	Crew	Crew Rate [$/hr]	Labour Total [$]	Construction Equipment Rate [$/unit]	Equipment Total [$]	Materials Rate [GBP/unit]	Rate [CAD$/unit]	Material Total [$]
474	Item 57 - Vent Isolation Valve 2 "		PROC 4.2.1.2				1.00	1.00	nr	0.39			Unzoned	1.70	0.66	Pipefitters	69.11	$ 45.82		$ -		580.00	$ 580.00
475	Item - 58 - Recirculation Isolation Valve 1 1/2"		PROC 4.2.1.2				1.00	1.00	nr	0.39			Unzoned	1.70	0.66	Pipefitters	69.11	$ 45.82		$ -		580.00	$ 580.00
476	Item - 59 - Clean up system Isolation Valve 1 1/2"		PROC 4.2.1.2				1.00	1.00	nr	0.39			Unzoned	1.70	0.66	Pipefitters	69.11	$ 45.82		$ -		580.00	$ 580.00
477	Item - 60 & 61 - Outlet Isolation Valve 1 1/2"		PROC 4.2.1.2				2.00	2.00	nr	0.39			Unzoned	1.70	1.33	Pipefitters	69.11	$ 91.64		$ -		580.00	$ 1,160.00
478	Item - 62 - Transfer System Supply Isolation Valve 1 1/2"		PROC 4.2.1.2				1.00	1.00	nr	0.39			Unzoned	1.70	0.66	Pipefitters	69.11	$ 45.82		$ -		580.00	$ 580.00
479	Item - 63 - Main Discharge Header Isolation Valve 1 1/2"		PROC 4.2.1.2				1.00	1.00	nr	0.39			Unzoned	1.70	0.66	Pipefitters	69.11	$ 45.82		$ -		580.00	$ 580.00
480	Item - 64 & 65 - Main Inlet Header Spare Connection Isolation Valve 1 1/2"		PROC 4.2.1.2				2.00	2.00	nr	0.39			Unzoned	1.70	1.33	Pipefitters	69.11	$ 91.64		$ -		580.00	$ 1,160.00
481	Item - 66 - Main Inlet Header Isolation Valve 1 1/2"		PROC 4.2.1.2				1.00	1.00	nr	0.39			Unzoned	1.70	0.66	Pipefitters	69.11	$ 45.82		$ -		460.00	$ 460.00
482	Item - 67 - Vacuum Relief Valve - 2"		PROC 4.2.1.2				1.00	1.00	nr	4.50			Unzoned	1.70	7.65	Pipefitters	69.11	$ 528.71		$ -		1,271.00	$ 1,271.00
483	Item - 68 - Recirculation Flow Orifice 1 1/2"		PROC 4.2.1.3				1.00	1.00	nr	0.39			Unzoned	1.70	0.66	Pipefitters	69.11	$ 45.82		$ -		580.00	$ 580.00
484	Item 69 & 70 - Commissioning Strainer 2 1/2"		PROC 4.2.1.3				2.00	2.00	nr	0.39			Unzoned	1.70	1.33	Pipefitters	69.11	$ 91.64		$ -		300.00	$ 600.00
485	Item 71 & 72 - Level Transmitter		PROC 4.2.1.3				2.00	2.00	nr	4.00			Unzoned	1.70	13.60	Electrical Workers	68.23	$ 927.97		$ -		2,269.00	$ 4,538.00
486	Item 73 - Cover Gas Pressure Transmitter		PROC 4.2.1.3				1.00	1.00	nr	6.00			Unzoned	1.70	10.20	Electrical Workers	68.23	$ 695.98		$ -		517.00	$ 517.00
487	Main Contractor's mark-up for storage, freight, transportation and profit. Say, 14% of material cost.		PROC 4.2.5.4				1.00	1.00	item				Unzoned	1.70	-	Pipefitters	69.11	$ -		$ -		-	$ -
	Downgraded D2O Tank (1 ea)							-						-	-		-	$ -		$ -			$ -
488	Tanks 25 Mg 38500 SS 304 Class 3		PROC 4.2.5.4				1.00	1.00	nr				Unzoned	1.70	-	Structural Steelwork	67.24	$ -		$ -		-	$ -
489	Tanks 25 Mg 38500 - Installation		PROC 4.2.5.4				1.00	1.00	nr				Unzoned	1.70	-	Structural Steelwork	67.24	$ -		$ -		-	$ -
490	Tanks 25 Mg 38500 - Commissioning		PROC 4.2.5.4				8.00	8.00	nr				Unzoned	1.70	-	Structural Steelwork	67.24	$ -		$ -		-	$ -
491	Valves; 2"		PROC 4.2.1.2				2.00	2.00	nr	0.39			Unzoned	1.70	1.33	Pipefitters	69.11	$ 91.64		$ -		620.00	$ 1,240.00
492	Pressure sensors		PROC 4.2.1.3				1.00	1.00	nr	4.00			Unzoned	1.70	6.80	Pipefitters	69.11	$ 469.97		$ -		517.00	$ 517.00
493	Level sensors		PROC 4.2.1.3				2.00	2.00	nr	4.00			Unzoned	1.70	13.60	Pipefitters	69.11	$ 939.94		$ -		2,269.00	$ 4,538.00
494	Pressure Gauges		PROC 4.2.1.3				2.00	2.00	nr	4.00			Unzoned	1.70	13.60	Pipefitters	69.11	$ 939.94		$ -		1,493.00	$ 2,986.00
495	Piping - S Steel - Inlets - 3 " for 100 Mg Tanks		PROC 4.2.1.1	75.00			1.00	75.00	m	0.58			Unzoned	1.70	73.31	Pipefitters	69.11	$ 5,066.85		$ -		52.15	$ 3,911.25
496	Piping - S Steel - Outlet - 3" for 100 Mg Tanks		PROC 4.2.1.1	75.00			1.00	75.00	m	0.58			Unzoned	1.70	73.31	Pipefitters	69.11	$ 5,066.85		$ -		52.15	$ 3,911.25
497	Switches - 2 level		PROC 4.2.1.3				2.00	2.00	nr	3.50			Unzoned	1.70	11.90	Electrical Workers	68.23	$ 811.97		$ -		1,011.00	$ 2,022.00
498	Transmitters - 2 ea		PROC 4.2.1.3				2.00	2.00	nr	4.00			Unzoned	1.70	13.60	Electrical Workers	68.23	$ 927.97		$ -		554.00	$ 1,108.00
499	Beetle - Leak Detection - 1 ea		PROC 4.2.1.3				1.00	1.00	nr	4.00			Unzoned	1.70	6.80	Electrical Workers	68.23	$ 463.98		$ -		758.00	$ 758.00
500	Isolation Valve		PROC 4.2.1.2				1.00	1.00	nr	0.39			Unzoned	1.70	0.66	Pipefitters	69.11	$ 45.82		$ -		2,577.00	$ 2,577.00
501	Data Cables to Control room		Bldg 4.1.3.1	90.00			1.00	90.00	m				Zone 3	2.33	-	Electrical Workers	68.23	$ -		$ -			$ -
502	Item - 100 - Transfer System Feed Isolation Valve - 1 1/2"		PROC 4.2.1.2				1.00	1.00	nr	0.39			Unzoned	1.70	0.66	Pipefitters	69.11	$ 45.82		$ -		580.00	$ 580.00
503	Main Contractor's mark-up for storage, freight, transportation and profit. Say, 14% of material cost.		PROC 4.2.5.4				1.00	1.00	item				Unzoned	1.70	-	Pipefitters	69.11	$ -		$ -		-	$ -
	CLEAN Up D2O Tank (3 ea)							-						-	-		-	$ -		$ -			$ -
504	Tanks 25 Mg 38500 SS 304 Class 3		PROC 4.2.5.4				3.00	3.00	nr				Unzoned	1.70	-	Structural Steelwork	67.24	$ -		$ -		-	$ -
505	Tanks 25 Mg 38500 - Installation		PROC 4.2.5.4				3.00	3.00	nr				Unzoned	1.70	-	Structural Steelwork	67.24	$ -		$ -		-	$ -
506	Tanks 25 Mg 38500 - Commissioning		PROC 4.2.5.4				8.00	8.00	nr				Unzoned	1.70	-	Structural Steelwork	67.24	$ -		$ -		-	$ -
507	Valves; 2"		PROC 4.2.1.2				6.00	6.00	nr	0.39			Unzoned	1.70	3.98	Pipefitters	69.11	$ 274.93		$ -		620.00	$ 3,720.00
508	Pressure sensors		PROC 4.2.1.3				3.00	3.00	nr	4.00			Unzoned	1.70	20.40	Pipefitters	69.11	$ 1,409.91		$ -		517.00	$ 1,551.00
509	Level sensors		PROC 4.2.1.3				6.00	6.00	nr	4.00			Unzoned	1.70	40.80	Pipefitters	69.11	$ 2,819.81		$ -		2,269.00	$ 13,614.00
510	Pressure Gauges		PROC 4.2.1.3				6.00	6.00	nr	4.00			Unzoned	1.70	40.80	Pipefitters	69.11	$ 2,819.81		$ -		1,493.00	$ 8,958.00
511	Piping - S Steel - Inlets - 3 " for 100 Mg Tanks		PROC 4.2.1.1	75.00			3.00	225.00	m	0.58			Unzoned	1.70	221.85	Pipefitters	69.11	$ 15,332.72		$ -		52.15	$ 11,733.75
512	Piping - S Steel - Outlet - 3" for 100 Mg Tanks		PROC 4.2.1.1	75.00			3.00	225.00	m	0.58			Unzoned	1.70	221.85	Pipefitters	69.11	$ 15,332.72		$ -		52.15	$ 11,733.75
513	Switches - 2 level		PROC 4.2.1.3				6.00	6.00	nr	3.50			Unzoned	1.70	35.70	Electrical Workers	68.23	$ 2,435.92		$ -		1,011.00	$ 6,066.00
514	Transmitters - 2 ea		PROC 4.2.1.3				6.00	6.00	nr	4.00			Unzoned	1.70	40.80	Electrical Workers	68.23	$ 2,783.91		$ -		554.00	$ 3,324.00
515	Beetle - Leak Detection - 1 ea		PROC 4.2.1.2				3.00	3.00	nr	4.00			Unzoned	1.70	20.40	Electrical Workers	68.23	$ 1,391.95		$ -		758.00	$ 2,274.00
516	Isolation Valve		PROC 4.2.1.2				3.00	3.00	nr	0.39			Unzoned	1.70	1.99	Pipefitters	69.11	$ 137.47		$ -		2,577.00	$ 7,731.00
517	Data Cables to Control room		Bldg 4.1.3.1	90.00			3.00	270.00	m				Zone 3	2.33	-	Electrical Workers	68.23	$ -		$ -		-	$ -
518	Item - 75 & 76 - Clean up Product Transfer Pump Suction 1 1/2" Discharge 1 1/2" including Item 78 & 79 Pump motor 4 HP		PROC 4.2.2.4				2.00	2.00	nr	4.00	nr		Unzoned	1.70	13.60	Pipefitters	69.11	$ 939.94		$ -		13,955.00	$ 27,910.00
519	Item - 77 - Oxidation unit Feed Pump Suction 1" Discharge 1/2" including Item 80 Oxidation Pump Motor 1 HP		PROC 4.2.2.4				1.00	1.00	nr	4.00	nr		Unzoned	1.70	6.80	Pipefitters	69.11	$ 469.97		$ -		13,955.00	$ 13,955.00
520	Item - 81 - Cover Gas Vent Control Valve Pnuematic Valve & Accessories 2 "		PROC 4.2.1.2				1.00	1.00	nr	0.39			Unzoned	1.70	0.66	Pipefitters	69.11	$ 45.82		$ -		790.00	$ 790.00
521	Item - 82 - Inlet Control Valve Pnuematic Control Valve & Accessories 1 1/2"		PROC 4.2.1.2				1.00	1.00	nr	0.39			Unzoned	1.70	0.66	Pipefitters	69.11	$ 45.82		$ -		580.00	$ 580.00
522	Item - 83 - Inlet Control Valve Pnuematic Control Valve & Accessories 1 1/2"		PROC 4.2.1.2				1.00	1.00	nr	0.39			Unzoned	1.70	0.66	Pipefitters	69.11	$ 45.82		$ -		580.00	$ 580.00
523	Item - 84 & 85- Outlet Control Valve Pnuematic Control Valve & Accessories 1"		PROC 4.2.1.2				2.00	2.00	nr	0.39			Unzoned	1.70	1.33	Pipefitters	69.11	$ 91.64		$ -		790.00	$ 1,580.00
524	Item - 86 - Cover Gas Relief Valve 2"		PROC 4.2.1.2				1.00	1.00	nr	0.39			Unzoned	1.70	0.66	Pipefitters	69.11	$ 45.82		$ -		620.00	$ 620.00
525	Item - 87, 88,& 89 - Relief Valve 3/4"		PROC 4.2.1.2				3.00	3.00	nr	0.39			Unzoned	1.70	1.99	Pipefitters	69.11	$ 137.47		$ -		1,271.00	$ 3,813.00
526	Item - 90 - Station Upgrader Feed Isolation Valve 2 1/2"		PROC 4.2.1.2				1.00	1.00	nr	0.39			Unzoned	1.70	0.66	Pipefitters	69.11	$ 45.82		$ -		580.00	$ 580.00
527	Item - 91 - Vent Isolation Valve 2"		PROC 4.2.1.2				1.00	1.00	nr	0.39			Unzoned	1.70	0.66	Pipefitters	69.11	$ 45.82		$ -		2,577.00	$ 2,577.00
528	Item - 92 - Cover Gas Supply Isolation Valve 2"		PROC 4.2.1.2				1.00	1.00	nr	0.39			Unzoned	1.70	0.66	Pipefitters	69.11	$ 45.82		$ -			$ -
529	Item - 93 - Isolation Valve 2"		PROC 4.2.1.2				1.00	1.00	nr	0.39			Unzoned	1.70	0.66	Pipefitters	69.11	$ 45.82		$ -		2,577.00	$ 2,577.00
530	Item - 94 - Cover Gas Drain Valve 2"		PROC 4.2.1.2				1.00	1.00	nr	0.39			Unzoned	1.70	0.66	Pipefitters	69.11	$ 45.82		$ -		580.00	$ 580.00
531	Item - 95 - Feed Isolation Valve 2 1/2"		PROC 4.2.1.2				1.00	1.00	nr	0.39			Unzoned	1.70	0.66	Pipefitters	69.11	$ 45.82		$ -		580.00	$ 580.00
532	Item - 96, 97, 98 & 99 - Isolation Valve 1 1/2"		PROC 4.2.1.2				4.00	4.00	nr	0.39			Unzoned	1.70	2.65	Pipefitters	69.11	$ 183.29		$ -		2,577.00	$ 10,308.00
533	Item - 101 & 102 - Discharge Isolation Valve - 1 1/2"		PROC 4.2.1.2				2.00	2.00	nr	0.39			Unzoned	1.70	1.33	Pipefitters	69.11	$ 91.64		$ -		580.00	$ 1,160.00
534	Item - 103 - Isolation Valve - 1 1/2"		PROC 4.2.1.2				1.00	1.00	nr	0.39			Unzoned	1.70	0.66	Pipefitters	69.11	$ 45.82		$ -		2,577.00	$ 2,577.00
535	Item - 104 - Clean Up Feed Isolation Valves - 1 1/2"		PROC 4.2.1.2				1.00	1.00	nr	0.39			Unzoned	1.70	0.66	Pipefitters	69.11	$ 45.82		$ -		580.00	$ 580.00
536	Item - 105 - Vacuum Relief Valve 2"		PROC 4.2.1.2				1.00	1.00	nr	4.50			Unzoned	1.70	7.65	Pipefitters	69.11	$ 528.71		$ -		1,271.00	$ 1,271.00
537	Item - 106 Recirculation Flow Orifice 1"		PROC 4.2.1.2				1.00	1.00	nr	0.33			Unzoned	1.70	0.56	Pipefitters	69.11	$ 38.77		$ -			$ -
538	Item - 107 & 108 - Commissioning Strainer 1 1/2"		PROC 4.2.1.2				2.00	2.00	nr	0.39			Unzoned	1.70	1.33	Pipefitters	69.11	$ 91.64		$ -			$ -
539	Item - 109 - Cover Gas Pressure Transmitter		PROC 4.2.1.2				1.00	1.00	nr	0.39			Unzoned	1.70	0.66	Electrical Workers	68.23	$ 45.24		$ -		517.00	$ 517.00

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Ref	Item	NRM Ref	PBS	Quantity L [m]	W [m]	H [m]	Nr [each]	Qty	Unit	Labour Norm Hrs/unit	Norm Unit	Norm Ref	Zone	Productivity [multiplier]	DFL Hours [Hrs]	Crew	Crew Rate [$/hr]	Labour Total [$]	Construction Equipment Rate [$/unit]	Equipment Total [$]	Materials Rate [GBP/unit]	Rate [CAD$/unit]	Material Total [$]
540	Item - 110 & 111 - Level Transmitter		PROC 4.2.1.2				2.00	2.00	nr	0.39			Unzoned	1.70	1.33	Electrical Workers	68.23	$ 90.48		$ -		2,269.00	$ 4,538.00
541	Main Contractor's mark-up for storage, freight, transportation and profit. Say, 14% of material cost.		PROC 4.2.5.4				1.00	1.00	item				Unzoned	1.70	-	Pipefitters	69.11	$ -		$ -		-	$ -
	TIE-ins for new tanks with Exstg tanks (at Exstg bldg)							-						-	-		-	$ -		$ -		-	$ -
	PHT D20 Supply 38110 - 100 Mg (8 Tanks)							-						-	-		-	$ -		$ -		-	$ -
542	Cutting/new 3 M pipe/Butt weld/Cut Off Valve/elbows/Tees/Testing/Tagging		STIE 4.2.11.1				8.00	8.00	item	30.00			Zone 3	2.33	559.20	Pipefitters	69.11	$ 38,647.99		$ -	6,500.00	10,725.00	$ 85,800.00
	Moderator D20 Supply 38110 - 100 Mg (7 Tanks)							-						-	-		-	$ -		$ -			$ -
543	Cutting/new 3 M pipe/Butt weld/Cut Off Valve/elbows/Tees/Testing/Tagging		STIE 4.2.11.1				7.00	7.00	item	30.00			Zone 3	2.33	489.30	Pipefitters	69.11	$ 33,816.99		$ -	6,500.00	10,725.00	$ 75,075.00
	TRF/SUP Feed 38110 - 100 Mg (2 Tanks)							-						-	-		-	$ -		$ -			$ -
544	Cutting/new 3 M pipe/Butt weld/Cut Off Valve/elbows/Tees/Testing/Tagging		STIE 4.2.11.1				2.00	2.00	item	30.00			Zone 3	2.33	139.80	Pipefitters	69.11	$ 9,662.00		$ -	6,500.00	10,725.00	$ 21,450.00
	TRF/SUP Product 38110 - 100 Mg (2 Tanks)							-						-	-		-	$ -		$ -			$ -
545	Cutting/new 3 M pipe/Butt weld/Cut Off Valve/elbows/Tees/Testing/Tagging		STIE 4.2.11.1				2.00	2.00	item	30.00			Zone 3	2.33	139.80	Pipefitters	69.11	$ 9,662.00		$ -	6,500.00	10,725.00	$ 21,450.00
	Downgraded D20 38500 - 50 Mg (2 Tanks)							-						-	-		-	$ -		$ -			$ -
546	Cutting/new 3 M pipe/Butt weld/Cut Off Valve/elbows/Tees/Testing/Tagging		STIE 4.2.11.1				2.00	2.00	item	30.00			Zone 3	2.33	139.80	Pipefitters	69.11	$ 9,662.00		$ -	5,500.00	9,075.00	$ 18,150.00
	Downgraded D20 38500 - 25 Mg (1 Tank)							-						-	-		-	$ -		$ -			$ -
547	Cutting/new 3 M pipe/Butt weld/Cut Off Valve/elbows/Tees/Testing/Tagging		STIE 4.2.11.1				1.00	1.00	item	30.00			Zone 3	2.33	69.90	Pipefitters	69.11	$ 4,831.00		$ -	5,000.00	8,250.00	$ 8,250.00
	D20 Clean up - 38410 - 25 Mg (3 Tanks)							-						-	-		-	$ -		$ -			$ -
548	Cutting/new 3 M pipe/Butt weld/Cut Off Valve/elbows/Tees/Testing/Tagging		STIE 4.2.11.1				3.00	3.00	item	30.00			Zone 3	2.33	209.70	Pipefitters	69.11	$ 14,493.00		$ -	5,000.00	8,250.00	$ 24,750.00
								-						-	-		-	$ -		$ -			$ -
549	Rubber mats at all likely spill locations (25 ea) (6X4ft)		STIE 4.2.11.1				25.00	25.00	EA				Zone 3	2.33	-	Building Works	60.43	$ -		$ -		-	$ -
								-						-	-		-	$ -		$ -			$ -
550	Cathodic protection including all accessories (25 ea)		Bldg 4.1.5.1				25.00	25.00	EA	3.00			Zone 3	2.33	174.75	Electrical Workers	68.23	$ 11,923.72		$ -	1,500.00	2,475.00	$ 61,875.00
								-						-	-		-	$ -		$ -			$ -
551	Crane Heavy duty Rental (for 3 months @ $40,000/month)		Bldg 4.2.4.1				3.00	3.00	mnths				Zone 3	2.33	-	Building Works	60.43	$ -		$ -		-	$ -
								-						-	-		-	$ -		$ -			$ -
552	Stack Monitor (installation, electrical connections, switches)		PROC 4.2.2.6				2.00	2.00	nr				Zone 3	2.33	-	Cladding	67.62	$ -		$ -		-	$ -
								-						-	-		-	$ -		$ -			$ -
553	Stainless Steel Ducts in Effluent Stack (14" dia) - ALL		PROC 4.2.2.6				140.00	140.00	m				Zone 3	2.33	-	Cladding	67.62	$ -		$ -		-	$ -
								-						-	-		-	$ -		$ -			$ -
554	Stainless Steel hoods and cover		PROC 4.2.2.6				3.00	3.00	nr				Zone 3	2.33	-	Cladding	67.62	$ -		$ -		-	$ -
	COMMON GENERAL ITEMS							-						-	-		-	$ -		$ -		-	$ -
555	Cable Trays c/w hanging supports and metal brackets		Bldg 4.1.3.1	200.00			1.00	200.00	m	0.60			Unzoned	1.70	204.00	Electrical Workers	68.23	$ 13,919.53		$ -	12.71	20.97	$ 4,194.30
556	Pipe supports c/w supports and rawl plugs		STIE 4.2.1.1				46.00	46.00	nr	1.20	nr		Unzoned	1.70	93.84	Pipefitters	69.11	$ 6,485.56	10.00	$ 460.00		54.00	$ 2,484.00
557	Instrumentation - SCADA (tanks to Control Room)		PROC 4.3.5.1				25.00	25.00	nr				Unzoned	1.70	-	Pipefitters	69.11	$ -		$ -			$ -
								-						-	-		-	$ -		$ -			$ -
	Tie-ins to existing services							-						-	-		-	$ -		$ -		-	$ -
558	X-ray scanning of tie-in locations		STIE 4.2.11.1				4.00	4.00	nr				Zone 3	2.33	-	Building works	60.43	$ -		$ -		-	$ -
								-						-	-		-	$ -		$ -			$ -
	Sub-Total																	**$ 2,054,344.04**		**$ 460.00**			**$ 1,052,371.80**
	ELECTRICAL CONTROL SYSTEMS																						
559	Main Control Panel (600 wide x 800deep); 2000A		Bldg 4.1.1.6				1.00	1.00	nr					-	-	Electrical Workers	68.23	$ -		$ -		-	$ -
560	Main Control Panel (600 wide x 800deep); 2500A		Bldg 4.1.1.6				1.00	1.00	nr					-	-	Electrical Workers	68.23	$ -		$ -		-	$ -
561	Main Control Panel (600 wide x 800deep); 3000A		Bldg 4.1.1.6				1.00	1.00	nr					-	-	Electrical Workers	68.23	$ -		$ -		-	$ -
								-						-	-		-	$ -		$ -			$ -
562	Panel Boards; 2000A		Bldg 4.1.1.6				1.00	1.00	nr	4.00	nr	MEpg558	Unzoned	1.70	6.80	Electrical Workers	68.23	$ 463.98		$ -	11,140.05	18,381.08	$ 18,381.08
														-	-		-	$ -		$ -			$ -
								-						-	-		-	$ -		$ -			$ -
								-						-	-		-	$ -		$ -			$ -
	Sub-Total																	**$ 463.98**		**$ -**			**$ 18,381.08**
	SPECIALIST EQUIPMENT																						
563	Mono rail system; 1T		Bldg 4.2.4.3				1.00	1.00	nr				Unzoned	1.70	-	Structural Steelwork	67.24	$ -		$ -		-	$ -
564	Mono rail system; 5T		Bldg 4.2.4.3				1.00	1.00	nr				Unzoned	1.70	-	Structural Steelwork	67.24	$ -		$ -		-	$ -
								-						-	-		-	$ -		$ -		-	$ -
	Sub-Total																	**$ -**		**$ -**			**$ -**

	TOTAL																	**$ 6,765,676.84**		**$ 1,374,557.91**			**$ 3,837,858.83**

	LIFE CYCLE COSTINGS																						
	Replacement roof materials							-						-	-		-	$ -		$ -		-	$ -
565	Built up Roof at Lvl 115.00 - Re-roof at 25 years	2.3.1.3	Bldg 4.4.5.1				600.00	600.00	m2				Zone 3	2.33	-	Roofers	58.38	$ -		$ -		-	$ -
566	Epoxy floor coatings (1 re-coat)		Bldg 4.4.6.3				1,042.75	1,042.75	m2				Zone 3	2.33	-	Flooring	63.61	$ -		$ -		-	$ -
567	Duct controllers (15 years)		PROC 4.2.1.3				1.00	1.00	item				Zone 3	2.33	-	Electrical Workers	68.23	$ -		$ -		-	$ -
568	Control valves (15 years)		PROC 4.2.1.2				1.00	1.00	item				Zone 3	2.33	-	Pipefitters	69.11	$ -		$ -		-	$ -
569	Valves (20 years)		PROC 4.2.1.2				1.00	1.00	item				Zone 3	2.33	-	Pipefitters	69.11	$ -		$ -		-	$ -
570	SCADA (25 years)		PROC 4.3.5.1				1.00	1.00	item				Zone 3	2.33	-	Electrical Workers	68.23	$ -		$ -		-	$ -
571	Office furniture		Bldg 4.4.6.14-O				1.00	1.00	item				Zone 3	2.33	-		-	$ -		$ -		-	$ -
572	Office flooring		Bldg 4.4.6.3-O				250.00	250.00	m2				Zone 3	2.33	-	Flooring	63.61	$ -		$ -		-	$ -

DNGS Heavy Water Management Building - Construction Cost Estimate

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Ref	Item	NRM Ref	PBS	Quantity						Labour									Construction Equipment		Materials		
				L	W	H	Nr	Qty	Unit	Norm		Norm Ref	Zone	Productivity	DFL Hours	Crew	Crew Rate	Labour Total	Rate	Equipment Total	Rate		Material Total
				[m]	[m]	[m]	[each]			Hrs/unit	Unit			[multiplier]	[Hrs]		[$/hr]	[$]	[$/unit]	[$]	[GBP/unit]	[CAD$/unit]	[$]
573	Washroom appliances		Bldg 4.4.6.14-O				1.00	1.00	item				Zone 3	2.33	-	Plumbers	66.47	$ -		$ -		-	$ -
574	Pumps (20 years) - overhaul and new impellers		PROC 4.2.2.4				1.00	1.00	item				Zone 3	2.33	-	Pipefitters	69.11	$ -		$ -		-	$ -
575	Replacement of valves and controls to HVAC systems		PROC 4.2.1.7				1.00	1.00	item				Zone 3	2.33	-	Pipefitters	69.11	$ -		$ -		-	$ -
								-						-	-		-	$ -		$ -		-	$ -
	Sub-Total																	**$ -**		**$ -**			**$ -**

DNGS Heavy Water Management Building - Construction Cost Estimate

Ref	Item	NRM Ref	PBS	All-in Rate [$/unit]	All-in Total [$]	Indirect Costs % of Labour Total [%]	Indirect Total [$]	Total Cost [$]	All-in Rate Split Lab [%]	Mat [%]	Equip [%]	Labour [$]	Materials [$]	Construction Equipment [$]	Total DFL Hours [hours]	Estimate Class	Assumptions
	[formulas >>>]				$ -		$ -	$ -				$ -	$ -	$ -	-		
	EXTERNAL WORKS																
	Remove existing surfaces				$ -	45%	$ -	$ -				$ -	$ -	$ -	-		
1	Clearing of Site / Site strip; 250mm deep	8.1.1.1	SPRP 4.4.7.1	5.60	$ 9,564.80	45%	$ 2,582.50	$ 12,147.30	60%	0%	40%	$ 7,288.38	$ -	$ 4,858.92	124.5 hrs		
2	Remove existing Conc Curbs & Dispose	8.1.2.3	SPRP 4.4.7.1		$ -	45%	$ 134.35	$ 957.62				$ 432.92	$ 524.70	$ -	12.5 hrs		
3	Remove existing Asphalt pavement and dispose	8.1.2.3	SPRP 4.4.7.1		$ -	45%	$ 752.38	$ 8,264.02				$ 2,424.34	$ 5,839.68	$ -	70.0 hrs		
					$ -	45%	$ -	$ -				$ -	$ -	$ -	-		
	Ground investigation				$ -	45%	$ -	$ -				$ -	$ -	$ -	-		
4	Trial trenches, 3m deep; 5.0m x 0.50m	9.5.3.1	SPRP 4.4.7.1		$ -	45%	$ 854.49	$ 3,007.00				$ 2,753.36	$ 253.64	$ -	79.5 hrs		
5	Trial trenches, 3m deep, commencing from 3m depth; 5.0m x 0.50m	9.5.3.1	SPRP 4.4.7.1		$ -	45%	$ 854.49	$ 3,007.00				$ 2,753.36	$ 253.64	$ -	79.5 hrs		
	Temporary services				$ -	45%	$ -	$ -				$ -	$ -	$ -	-		
6	External Lighting; Lighting Columns, OPG Security Standard c/w with lamp 8m high 2 luminaries		Bldg 4.7.2.5	2,279.39	$ 9,117.56	45%	$ 820.58	$ 9,938.14	20%	70%	10%	$ 1,987.63	$ 6,956.70	$ 993.81	30.9 hrs		
7	Lunchroom Trailers and Washroom Trailers 22ft * 7ft 6" c.w Drying Racks, Lockers, Tables, Seating, heaters, Microwave, etc. Including transportation @$1200/mnth		Bldg 4.7.2.4	1,200.00	$ 33,600.00	45%	$ -	$ 33,600.00	0%	100%	0%	$ -	$ 33,600.00	$ -	-		One Office trailer c/w Furniture and one Portable toilet for 24 months rental
8	Temporary Offices - 3 - 20' office trailers for 28 months rental @ $750 ea per month including furniture, mobilisation and demobilisation		Bldg 4.7.2.4	2,250.00	$ 63,000.00	45%	$ -	$ 63,000.00	0%	100%	0%	$ -	$ 63,000.00	$ -	-		One Office trailer c/w Furniture and one Portable toilet for 24 months rental
	Site access road				$ -	45%	$ -	$ -				$ -	$ -	$ -	-		
9	Temporary road to new site	8.2.1.1	Bldg 4.7.2.1	65.21	$ 54,774.72	45%	$ 7,394.59	$ 62,169.31	30%	50%	20%	$ 18,650.79	$ 31,084.65	$ 12,433.86	318.6 hrs		
	Temporary car parking				$ -	45%	$ -	$ -				$ -	$ -	$ -	-		
10	Car parking alternatives	8.2.1.3	Bldg 4.7.2.1	94.38	$ 33,976.80	45%	$ 4,586.87	$ 38,563.67	30%	50%	20%	$ 11,569.10	$ 19,281.83	$ 7,712.73	197.6 hrs		
	Temporary Fencing, Railing and Walls				$ -	45%	$ -	$ -				$ -	$ -	$ -	-		
11	Fencing, OPG Standard Security height, 2.4m; Corner posts braced, intermediate posts at 3m centres, 1.2m set in ground, concrete surround.	8.4.1.1	Bldg 4.7.2.3	164.00	$ 36,080.00	45%	$ 4,870.80	$ 40,950.80	30%	60%	10%	$ 12,285.24	$ 24,570.48	$ 4,095.08	182.7 hrs		
12	Pedestrian access around new site		Bldg 4.7.2.1		$ -	45%	$ 537.42	$ 8,123.17				$ 1,731.67	$ 402.00	$ 5,989.50	50.0 hrs		
13	Gates (3.6 Mx1.175 H)	8.4.1.3	Bldg 4.7.2.1	1,833.96	$ 7,335.84	45%	$ 990.34	$ 8,326.18	30%	60%	10%	$ 2,497.85	$ 4,995.71	$ 832.62	37.1 hrs		
	Street Furniture				$ -	45%	$ -	$ -				$ -	$ -	$ -	-		
14	External Lighting; Lighting Columns, OPG Security Standard c/w with lamp 8m high 2 luminnaire	8.7.9.2	SPRP 4.4.7.2	3,798.98	$ 18,994.91	45%	$ 2,564.31	$ 21,559.23	30%	60%	10%	$ 6,467.77	$ 12,935.54	$ 2,155.92	100.5 hrs		
15	Bollards; permanent bollard; non illuminated; galvanised steel removable and lockable pattern	8.4.4.3	SPRP 4.4.7.2		$ -	45%	$ 1,521.03	$ 14,325.23				$ 4,901.09	$ 760.98	$ 8,663.16	133.3 hrs		
16	Turnstiles		SPRP 4.4.7.2	5,060.84	$ 20,243.36	45%	$ 2,732.85	$ 22,976.21	30%	60%	10%	$ 6,892.86	$ 13,785.73	$ 2,297.62	114.1 hrs		
17	Directional signage		SPRP 4.4.7.2		$ -	45%	$ 42.78	$ 4,262.84				$ 137.84	$ -	$ 4,125.00	3.7 hrs		
18	Removal of one Light post incld UG cable		SPRP 4.4.7.2		$ -	45%	$ 30.04	$ 165.05				$ 96.81	$ 68.24	$ -	2.5 hrs		
	External drainage				$ -	45%	$ -	$ -				$ -	$ -	$ -	-		
19	Sewer line connections to main line		STIE 4.2.11.2	55.00	$ 2,200.00	45%	$ 396.00	$ 2,596.00	40%	40%	20%	$ 1,038.40	$ 1,038.40	$ 519.20	17.7 hrs		as per previous project
20	Storm water connections to main line		STIE 4.2.11.2	55.00	$ 2,750.00	45%	$ 495.00	$ 3,245.00	40%	40%	20%	$ 1,298.00	$ 1,298.00	$ 649.00	22.2 hrs		
21	Manholes/Access chambers; 750 x 700 chamber 1500 depth to invert; includes excavation, support, backfilling and disposal, concrete base, brickwork chamber, concrete cover slab, concrete benching and channels, step irons, access cover and frames	8.6.1.5	SPRP 4.4.7.2	2,786.44	$ 16,718.63	45%	$ 3,009.35	$ 19,727.98	40%	40%	20%	$ 7,891.19	$ 7,891.19	$ 3,945.60	134.8 hrs		
22	Valve Chambers; 1.2m diameter x 2.5m depth	8.6.1.5	SPRP 4.4.7.2	2,844.37	$ 11,377.48	45%	$ 2,047.95	$ 13,425.42	40%	40%	20%	$ 5,370.17	$ 5,370.17	$ 2,685.08	91.7 hrs		
23	Weeper tiles (perforated pipe in drainage under slab on grade c/w Geotextile membrane and stone surround (600mm Dia)		SPRP 4.4.7.1	200.00	$ 31,000.00	45%	$ 5,580.00	$ 36,580.00	40%	40%	20%	$ 14,632.00	$ 14,632.00	$ 7,316.00	249.9 hrs		
24	Excavation in rock for weeper tile (1mx1mx1m)		SPRP 4.4.7.1		$ -	45%	$ 5,553.29	$ 25,517.86				$ 17,893.95	$ 7,623.91	$ -	516.5 hrs		
	Connection to existing services				$ -	45%	$ -	$ -				$ -	$ -	$ -	-		
25	Main water line connections	8.7.1.1	Bldg 4.2.1.4	120.45	$ 2,409.00	45%	$ 433.62	$ 2,842.62	40%	40%	20%	$ 1,137.05	$ 1,137.05	$ 568.52	17.1 hrs		
26	Fire Hydrants		Bldg 4.2.10.2		$ -	45%	$ 762.75	$ 4,859.35				$ 2,457.74	$ -	$ 2,401.61	62.5 hrs		
27	CCTV cameras		Bldg 4.1.3.6-O	2,899.99	$ 46,399.84	45%	$ 6,263.98	$ 52,663.82	30%	50%	20%	$ 15,799.15	$ 26,331.91	$ 10,532.76	231.5 hrs		
28	Buried Services - Appendix - F - Standby Generator Cable Duct		SPRP 4.1.8.1	6,000.00	$ 6,000.00	45%	$ 810.00	$ 6,810.00	30%	50%	20%	$ 2,043.00	$ 3,405.00	$ 1,362.00	29.9 hrs		
29	Buried Services - Appendix - F - Service water - Low pressure		SPRP 4.2.12.1	3,000.00	$ 3,000.00	45%	$ 405.00	$ 3,405.00	30%	50%	20%	$ 1,021.50	$ 1,702.50	$ 681.00	15.4 hrs		
30	Buried Services - Appendix - F - Cables 500 below Ground		SPRP 4.1.8.1		$ -	45%	$ -	Excluded									
31	Buried Services - Appendix - F- 12" Steam & 3" Condensate return		SPRP 4.2.12.1		$ -	45%	$ -	Excluded									
32	Buried Services - Appendix - F- 6" Air		SPRP 4.2.12.1		$ -	45%	$ -	Excluded									
33	Buried Services - Appendix - F- 8" Water		SPRP 4.2.12.1		$ -	45%	$ -	Excluded									
34	Buried Services - Appendix - F- Inactive Drainage		SPRP 4.2.12.1		$ -	45%	$ -	Excluded									
35	Buried Services - Appendix - F- Misc Fire Line		SPRP 4.3.8.1		$ -	45%	$ -	Excluded									
36	Buried Services - Appendix - F-Fire Protection		SPRP 4.3.8.1	3,000.00	$ 3,000.00	45%	$ 405.00	$ 3,405.00	30%	50%	20%	$ 1,021.50	$ 1,702.50	$ 681.00	14.8 hrs		
37	Buried Services - Appendix - F-Helium		SPRP 4.2.12.1	3,000.00	$ 3,000.00	45%	$ 405.00	$ 3,405.00	30%	50%	20%	$ 1,021.50	$ 1,702.50	$ 681.00	14.8 hrs		
38	Buried Services - Appendix - F- Oxygen		SPRP 4.2.12.1	3,000.00	$ 3,000.00	45%	$ 405.00	$ 3,405.00	30%	50%	20%	$ 1,021.50	$ 1,702.50	$ 681.00	14.8 hrs		
39	Buried Services - Appendix - F-Argon		SPRP 4.2.12.1	3,000.00	$ 3,000.00	45%	$ 405.00	$ 3,405.00	30%	50%	20%	$ 1,021.50	$ 1,702.50	$ 681.00	14.8 hrs		
40	Buried Services - Appendix - F-Nitrogen		SPRP 4.2.12.1		$ -	45%	$ -	Excluded									
41	Buried Services - Appendix - F-Box Drain Sump		SPRP 4.2.12.1		$ -	45%	$ -	Excluded									
42	Buried Services - Appendix - F-600 mm Dia Corrugated Steel Pipe CSP Yard Drainage		SPRP 4.2.12.1	1,500.00	$ 1,500.00	45%	$ 202.50	$ 1,702.50	30%	50%	20%	$ 510.75	$ 851.25	$ 340.50	8.7 hrs		
43	Relocate Existing Cable Duct from Standby Generators OIL Tanks # 1 & 2		SPRP 4.2.12.1	3,000.00	$ 3,000.00	45%	$ 405.00	$ 3,405.00	30%	50%	20%	$ 1,021.50	$ 1,702.50	$ 681.00	15.0 hrs		
44	Relocate existing Low Pressure Service Water open system piping.		SPRP 4.2.12.1	1,500.00	$ 1,500.00	45%	$ 202.50	$ 1,702.50	30%	50%	20%	$ 510.75	$ 851.25	$ 340.50	7.7 hrs		
	Demolition/removal of existing structures				$ -	45%	$ -	$ -				$ -	$ -	$ -	-		

DNGS Heavy Water Management Building - Construction Cost Estimate

Ref	Item	NRM Ref	PBS	All-in Rate [$/unit]	All-in Total [$]	Indirect Costs % of Labour Total [%]	Indirect Total [$]	Total Cost [$]	All-in Rate Split Lab [%]	Mat [%]	Equip [%]	Labour [$]	Materials [$]	Construction Equipment [$]	Total DFL Hours [hours]	Estimate Class	Assumptions
45	Demolition of existing building (Offices)	9.2.1.1	SPRP 4.4.8.1	43.84	$ 6,904.88	45%	$ 1,864.32	$ 8,769.20	60%	10%	30%	$ 5,261.52	$ 876.92	$ 2,630.76	89.9 hrs		
46	Demolition of existing underground services (Offices)	9.2.1.2	SPRP 4.4.8.1	43.84	$ 1,380.98	45%	$ 372.86	$ 1,753.84	60%	10%	30%	$ 1,052.30	$ 175.38	$ 526.15	18.0 hrs		
47	Temporary Terminating of services	9.4.1.2	Bldg 4.7.2.5	178.56	$ 714.25	45%	$ 192.85	$ 907.10	60%	30%	10%	$ 544.26	$ 272.13	$ 90.71	9.3 hrs		
	Asphalt road				$ -	45%	$ -	$ -				$ -	$ -	$ -	-		
48	Reinstatement of Asphalt road (incld roadbase)		SPRP 4.4.7.2	65.21	$ 10,433.28	45%	$ 1,408.49	$ 11,841.77	30%	50%	20%	$ 3,552.53	$ 5,920.89	$ 2,368.35	60.7 hrs		
49	New Kerbs at roads (reinstated road portions)		SPRP 4.4.7.2	41.68	$ 2,667.46	45%	$ 360.11	$ 3,027.56	30%	50%	20%	$ 908.27	$ 1,513.78	$ 605.51	15.5 hrs		
50	Line painting;Continuous line in reflectorised white 200mm wide		SPRP 4.4.7.2	2.15	$ 343.20	45%	$ 46.33	$ 389.53	30%	50%	20%	$ 116.86	$ 194.77	$ 77.91	2.0 hrs		
51	Road signs		SPRP 4.4.7.2	172.43	$ 689.70	45%	$ 93.11	$ 782.81	30%	50%	20%	$ 234.84	$ 391.40	$ 156.56	4.0 hrs		
					$ -	45%	$ -	$ -				$ -	$ -	$ -	-		
	Sub-Total				**$ 449,676.67**		**$ 63,794.83**	**$ 574,917.61**				**$ 171,252.73**	**$ 308,303.91**	**$ 95,360.96**	**3,216.0 hrs**		
	SITE INVESTIGATION																
52	CAT scan of existing buried services and other obstacles	9.5.3.1	SPRP 4.4.7.1		$ -	45%	$ -	Excluded									BY OWNER
					$ -	45%	$ -	$ -				$ -	$ -	$ -	-		
	Sub-Total				**$ -**		**$ -**	**$ -**				**$ -**	**$ -**	**$ -**	**-**		
	WORKS TO EXISTING STRUCTURES																
53	Remove existing Loading bay and Dock	7.1.1.1	SPRP 4.4.8.1	43.84	$ 3,616.84	45%	$ 976.55	$ 4,593.39	60%	10%	30%	$ 2,756.03	$ 459.34	$ 1,378.02	47.1 hrs		
54	Cut and patch at new openings for pipes	7.1.1.2	SPRP 4.4.7.2	300.00	$ 15,000.00	45%	$ 4,050.00	$ 19,050.00	60%	10%	30%	$ 11,430.00	$ 1,905.00	$ 5,715.00	189.1 hrs		
55	New door for Access to new building	7.1.1.2	Bldg 4.4.6.1	1,334.03	$ 1,334.03	45%	$ 180.09	$ 1,514.12	30%	60%	10%	$ 454.24	$ 908.47	$ 151.41	7.5 hrs		
	Minor building works				$ -	45%	$ -	$ -				$ -	$ -	$ -	-		
56	Repairs to existing building after Ramp removal	8.8.1.1	SPRP 4.4.7.2	50.04	$ 6,255.56	45%	$ 844.50	$ 7,100.06	30%	60%	10%	$ 2,130.02	$ 4,260.04	$ 710.01	35.2 hrs		
57	Repairs to existing building after Loading dock removal	8.8.1.3	SPRP 4.4.7.2	40.64	$ 1,015.99	45%	$ 137.16	$ 1,153.15	30%	60%	10%	$ 345.94	$ 691.89	$ 115.31	5.7 hrs		
					$ -	45%	$ -	$ -				$ -	$ -	$ -	-		
	Sub-Total				**$ 27,222.42**		**$ 6,188.30**	**$ 33,410.72**				**$ 17,116.23**	**$ 8,224.74**	**$ 8,069.75**	**284.7 hrs**		
	SUBSTRUCTURE																
	EXCAVATION				$ -	45%	$ -	$ -				$ -	$ -	$ -	-		
	Bulk excavation				$ -	45%	$ -	$ -				$ -	$ -	$ -	-		
58	Vacuum Excavation (uptp 2.5 M) at buried services (4 weeks@$40,000/week		SPRP 4.7.1.2	40,000.00	$ 160,000.00	45%	$ 14,400.00	$ 174,400.00	20%	20%	60%	$ 34,880.00	$ 34,880.00	$ 104,640.00	595.8 hrs		4 weeks rental of Vaccuum truck & pumps
59	Hand Excavation around buried services		SPRP 4.4.7.1		$ -	45%	$ 1,269.64	$ 4,091.08				$ 4,091.08	$ -	$ -	118.1 hrs		hand excavation around cables
60	Bulk excavation for tank farm; 10-15m max depth		SPRP 4.4.7.1		$ -	45%	$ 198,871.75	$ 913,172.40				$ 640,808.96	$ 272,363.44	$ -	18,495.2 hrs		
61	Extra over for excavation in rock; 1.0-2.0m maximum depth		SPRP 4.4.7.1		$ -	45%	$ 43,888.94	$ 201,673.37				$ 141,419.91	$ 60,253.46	$ -	4,081.7 hrs		
62	Disposal of excavated material to temporary spoil heap; 100m from excavations		SPRP 4.4.7.4		$ -	45%	$ 34,288.23	$ 175,164.30				$ 110,484.30	$ 64,680.00	$ -	3,188.8 hrs		
63	Disposal of excavated rock material to temporary spoil heap; 100m from excavations		SPRP 4.4.7.4		$ -	45%	$ 3,291.67	$ 16,831.94				$ 10,606.49	$ 6,225.45	$ -	306.1 hrs		
64	Disposal of excavated rock material to temporary spoil heap; removal 15 km distance; using 20 t tipper		SPRP 4.4.7.4		$ -	45%	$ 12,618.07	$ 67,884.46				$ 40,658.22	$ 27,226.24	$ -	1,173.5 hrs		
65	Disposal of excavated material from temporary spoil heap to licensed tip; Contaminated waste; removal 15 km distance; using 20 t tipper		SPRP 4.4.7.4		$ -	45%	$ 75,434.11	$ 405,776.09				$ 243,065.47	$ 162,710.63	$ -	7,015.4 hrs		
66	Disposal of excavated material from temporary spoil heap to licensed tip; Contaminated waste; removal 15 km distance; using 20 t tipper; ADDITIONAL for contaminated sludge		SPRP 4.4.7.4	217.80	$ 1,667,531.25	45%	$ 375,194.53	$ 2,042,725.78	50%	0%	50%	$ 1,021,362.89	$ -	$ 1,021,362.89	17,446.7 hrs		
67	Disposal of excavated material from temporary spoil heap to licensed tip; Un-contaminated waste; removal 15 km distance; using 20 t tipper		SPRP 4.4.7.4		$ -	45%	$ 75,434.11	$ 405,776.09				$ 243,065.47	$ 162,710.63	$ -	7,015.4 hrs		
68	Double handling of excavated earth material; using 1.5 m3 tractor loader and 22.5 t ADT; 1000m average distance moved		SPRP 4.4.7.4		$ -	45%	$ 82,291.76	$ 400,080.77				$ 265,162.33	$ 134,918.44	$ -	7,653.2 hrs		
69	Double handling of excavated rock material; using 1.5 m3 tractor loader and 22.5 t ADT; 1000m average distance moved		SPRP 4.4.7.4		$ -	45%	$ 10,972.23	$ 53,364.31				$ 35,354.98	$ 18,009.34	$ -	1,020.4 hrs		
70	Contaminated waste disposal fees (766 loads x 10 = 7660 M3)		SPRP 4.4.7.4		$ -	45%	$ -	Excluded									By Owner - cost not carried
	Detailed excavation				$ -	45%	$ -	$ -				$ -	$ -	$ -	-		
71	Detailed excavation for 100Mg tanks; in rock; 1.0-2.0m maximum depth	1.1.1.1	SPRP 4.4.7.1		$ -	45%	$ 28,870.63	$ 132,662.97				$ 93,027.58	$ 39,635.39	$ -	2,685.0 hrs		
72	Detailed excavation for 50Mg tanks; in rock; 1.0-2.0m maximum depth	1.1.1.1	SPRP 4.4.7.1		$ -	45%	$ 2,110.43	$ 9,697.59				$ 6,800.26	$ 2,897.32	$ -	196.3 hrs		
73	Detailed excavation for 25Mg tanks; in rock	1.1.1.1	SPRP 4.4.7.1		$ -	45%	$ 3,418.89	$ 15,710.09				$ 11,016.42	$ 4,693.66	$ -	318.0 hrs		
74	Detail Excavation for dike foundations; in rock; 1.0-2.0m maximum depth	1.1.1.1	SPRP 4.4.7.1		$ -	45%	$ 2,984.45	$ 13,713.79				$ 9,616.55	$ 4,097.24	$ -	277.6 hrs		
75	Detail Excavation for dike foundations; in rock; 1.0-2.0m maximum depth	1.1.1.1	SPRP 4.4.7.1		$ -	45%	$ 6,090.71	$ 27,987.33				$ 19,625.62	$ 8,361.71	$ -	566.4 hrs		
76	Excavation for Inspection pit	1.1.1.1	SPRP 4.4.7.1		$ -	45%	$ 5,107.35	$ 23,451.76				$ 16,457.02	$ 6,994.74	$ -	475.0 hrs		
77	Excavation for Inspection pit ; in rock	1.1.1.1	SPRP 4.4.7.1		$ -	45%	$ 3,251.36	$ 14,940.29				$ 10,476.62	$ 4,463.67	$ -	302.4 hrs		
78	Detail Excavation for Weeper Tiles in Rock	1.1.1.1	SPRP 4.4.7.1		$ -	45%	$ 862.73	$ 3,964.32				$ 2,779.91	$ 1,184.41	$ -	80.2 hrs		
79	Disposal of caisson spoils; removal 15 km distance; using 20 t tipper	8.8.3.1	SPRP 4.4.7.4		$ -	45%	$ 3,014.90	$ 16,217.79				$ 9,714.68	$ 6,503.11	$ -	280.4 hrs		
80	Disposal of caisson spoils; removal 15 km distance; using 20 t tipper	8.8.3.1	SPRP 4.4.7.4		$ -	45%	$ 6,029.80	$ 32,435.59				$ 19,429.36	$ 13,006.22	$ -	560.8 hrs		
81	Disposal of excavated rock material to temporary spoil heap; 100m from excavations	1.2.1.5	SPRP 4.4.7.4		$ -	45%	$ 3,569.19	$ 18,251.04				$ 11,500.72	$ 6,750.32	$ -	331.9 hrs		
82	Disposal of excavated material to temporary spoil heap; 100m from excavations	1.2.1.5	SPRP 4.4.7.4		$ -	45%	$ 880.58	$ 4,498.51				$ 2,837.42	$ 1,661.09	$ -	81.9 hrs		

DNGS Heavy Water Management Building - Construction Cost Estimate

Ref	Item	NRM Ref	PBS	All-in Rate [$/unit]	All-in Total [$]	Indirect Costs % of Labour Total [%]	Indirect Total [$]	Total Cost [$]	All-in Rate Split Lab [%]	Mat [%]	Equip [%]	Labour [$]	Materials [$]	Construction Equipment [$]	Total DFL Hours [hours]	Estimate Class	Assumptions
83	Disposal of excavated rock material to temporary spoil heap; removal 15 km distance; using 20 t tipper		SPRP 4.4.7.4		$ -	45%	$ 13,681.89	$ 73,607.77				$ 44,086.10	$ 29,521.67	$ -	1,272.4 hrs		
84	Disposal of excavated material from temporary spoil heap to licensed tip; Contaminated waste; removal 15 km distance; using 20 t tipper		SPRP 4.4.7.4		$ -	45%	$ 3,874.54	$ 20,841.99				$ 12,484.64	$ 8,357.35	$ -	360.3 hrs		
85	Double handling of excavated earth material; using 1.5 m3 tractor loader and 22.5 t ADT; 1000m average distance moved		SPRP 4.4.7.4		$ -	45%	$ 2,113.39	$ 10,274.73				$ 6,809.80	$ 3,464.93	$ -	196.5 hrs		
86	Double handling of excavated rock material; using 1.5 m3 tractor loader and 22.5 t ADT; 1000m average distance moved		SPRP 4.4.7.4		$ -	45%	$ 11,897.30	$ 57,863.44				$ 38,335.74	$ 19,527.70	$ -	1,106.5 hrs		
87	Contaminated waste disposal fees	1.2.1.2	SPRP 4.4.7.4		$ -	45%	$ 387.45	$ 1,248.46				$ 1,248.46	$ -	$ -	36.0 hrs		By Owner - cost not carried
	Earthwork support				$ -	45%	$ -	$ -				$ -	$ -	$ -	-		
88	Caissons; bored in situ reinforced concrete piling; vertical 450mm diameter cast-in-place piles; 20N/mm2 concrete; nominal reinforcement	8.8.3.1	SPRP 4.4.7.1	188.27	$ 1,328,397.84	45%	$ 119,555.81	$ 1,447,953.65	20%	40%	40%	$ 289,590.73	$ 579,181.46	$ 579,181.46	4,660.8 hrs		
89	Caissons; bored in situ reinforced concrete piling; vertical 450mm diameter empty bores	8.8.3.1	SPRP 4.4.7.1	86.30	$ 608,897.52	45%	$ 54,800.78	$ 663,698.30	20%	40%	40%	$ 132,739.66	$ 265,479.32	$ 265,479.32	2,267.4 hrs		
90	Trimming material other than topsoil, rock or artificial hard material; using D4H dozer, tractor loader or motor grader average rate to sides of caisson walls; 45-90˚ to horizontal	8.8.3.1	SPRP 4.4.7.1		$ -	45%	$ 5,004.68	$ 19,967.61				$ 16,126.20	$ 3,841.41	$ -	465.4 hrs		
91	Trimming rock; using D6E dozer; vertical to sides of caisson walls	8.8.3.1	SPRP 4.4.7.1		$ -	45%	$ 7,073.28	$ 28,684.72				$ 22,791.69	$ 5,893.02	$ -	657.8 hrs		
92	Steel in Caissons (Soldier Piles) IPN 280 @ 54Kgs/LM; 203 x 203 mm; length 15m		SPRP 4.4.7.1	10,534.74	$ 316,042.16	45%	$ 14,221.90	$ 330,264.05	10%	60%	30%	$ 33,026.41	$ 198,158.43	$ 99,079.22	531.5 hrs		
93	Waterproofing to sides of wall (inside face); Bituthene 4000; lapped joints; at any inclination	1.3.1.1	SPRP 4.4.7.1		$ -	45%	$ 8,007.49	$ 77,983.58				$ 25,801.92	$ 4,830.95	$ 47,350.71	744.7 hrs		
94	Shoring for inspection pit	8.8.3.1	SPRP 4.4.7.1	120.00	$ 53,760.00	45%	$ 7,257.60	$ 61,017.60	30%	60%	10%	$ 18,305.28	$ 36,610.56	$ 6,101.76	312.7 hrs		
	Dewatering				$ -	45%	$ -	$ -				$ -	$ -	$ -	-		
95	Dewatering equipment (rental 3months)	9.3.1.1	SPRP 4.7.1.3	60,000.00	$ 60,000.00	45%	$ -	$ 60,000.00	0%	0%	100%	$ -	$ -	$ 60,000.00	-		
96	Holding tanks and filter bags(rental 3months)	9.3.1.1	SPRP 4.7.1.3	75,000.00	$ 75,000.00	45%	$ -	$ 75,000.00	0%	0%	100%	$ -	$ -	$ 75,000.00	-		
97	75mm pipes for temp dewatering - 2 lines for 300m length discharge to Intake		SPRP 4.7.1.3	20.00	$ 12,000.00	45%	$ 1,620.00	$ 13,620.00	30%	60%	10%	$ 4,086.00	$ 8,172.00	$ 1,362.00	69.8 hrs		
98	Pumps rental (3 months) 600 V - 2 ea		SPRP 4.7.1.3	3,000.00	$ 18,000.00	45%	$ -	$ 18,000.00	0%	0%	100%	$ -	$ -	$ 18,000.00	-		
99	Diesel Genset for Pumps rental (3 months)		SPRP 4.7.1.3	3,000.00	$ 18,000.00	45%	$ -	$ 18,000.00	0%	0%	100%	$ -	$ -	$ 18,000.00	-		
100	Diesel fuel (50 liters daily for 60 daysx2 ea)		SPRP 4.7.1.3	1.50	$ 9,000.00	45%	$ -	$ 9,000.00	0%	0%	100%	$ -	$ -	$ 9,000.00	-		
					$ -	45%	$ -	$ -				$ -	$ -	$ -	-		
	BELOW GROUND CONSTRUCTION				$ -	45%	$ -	$ -				$ -	$ -	$ -	-		
	Slab on grade				$ -	45%	$ -	$ -				$ -	$ -	$ -	-		
101	Level and compact bottoms of excavations	1.4.1.1	Bldg 4.4.7.1		$ -	45%	$ 3,620.39	$ 41,827.61				$ 11,665.70	$ 30,161.91	$ -	336.7 hrs		
102	Formwork to sides of slab on grade; plane vertical; width 0.3m	1.4.1.1	Bldg 4.4.1.1		$ -	45%	$ 1,367.50	$ 5,599.93				$ 4,406.39	$ 551.34	$ 642.21	119.8 hrs		
103	Reinforcement to insitu concrete slab; 100kg/m3; deformed high yield steel bars in bent and cut lengths; using 16mm nominal size	1.4.1.1	Bldg 4.4.1.2		$ -	45%	$ 8,915.84	$ 67,671.61				$ 28,728.81	$ 4,573.03	$ 34,369.76	781.2 hrs		
104	Insitu concrete slab on grade; Grade C40 cement; 300mm thick	1.4.1.1	Bldg 4.4.1.1		$ -	45%	$ 2,593.69	$ 82,343.46				$ 8,357.43	$ 5,777.28	$ 68,208.75	227.3 hrs		
105	Less: Pad foundations for tanks	1.4.1.1	Bldg 4.4.1.1		$ -	45%	$ (684.46)	$ (21,730.09)				$ (2,205.49)	$ (1,524.60)	$ (18,000.00)	(60.0 hrs)		
106	Surface finish to insitu concrete slab on grade; Float finish		Bldg 4.4.1.1		$ -	45%	$ 960.62	$ 3,095.34				$ 3,095.34	$ -	$ -	84.2 hrs		
107	Weeping tiles below slab on grade; 225mm pipes unplasticized pvc pipes	1.4.1.8	Bldg 4.4.1.1		$ -	45%	$ 539.21	$ 22,315.78				$ 1,737.44	$ 127.71	$ 20,450.63	50.1 hrs		
	Pad foundations for tanks				$ -	45%	$ -	$ -				$ -	$ -	$ -	-		
108	Formwork for 19 - 100 Mg Tank Foundations; curved; width exceeding 1.22m	1.1.1.1	Bldg 4.4.1.1		$ -	45%	$ 20,654.85	$ 89,760.49				$ 66,554.53	$ 8,328.22	$ 14,877.74	1,809.9 hrs		
109	Formwork for 2 - 50 Mg Tank Foundations; curved; width exceeding 1.22m	1.1.1.1	Bldg 4.4.1.1		$ -	45%	$ 1,494.76	$ 6,495.82				$ 4,816.45	$ 602.70	$ 1,076.68	131.0 hrs		
110	Formwork for 4 - 25 Mg Tank Foundations; curved; width exceeding 1.22m	1.1.1.1	Bldg 4.4.1.1		$ -	45%	$ 2,329.49	$ 10,123.36				$ 7,506.15	$ 939.27	$ 1,677.94	204.1 hrs		
111	Reinforcement in Tank Foundations (150 Kgs/M3); deformed high yield steel bars in bent and cut lengths; using 16mm nominal size	1.1.1.1	Bldg 4.4.1.2		$ -	45%	$ 72,897.94	$ 553,298.59				$ 234,893.38	$ 37,390.17	$ 281,015.05	6,387.7 hrs		
112	Concrete for 19 - 100 Mg Tank Foundations; thickness exceeding 500mm	1.1.1.1	Bldg 4.4.1.1		$ -	45%	$ 10,426.73	$ 385,997.43				$ 33,597.24	$ 23,357.63	$ 329,042.56	913.6 hrs		
113	Concrete for 2- 50 Mg Tank Foundations; thickness exceeding 500mm	1.1.1.1	Bldg 4.4.1.1		$ -	45%	$ 592.87	$ 21,948.16				$ 1,910.37	$ 1,328.14	$ 18,709.66	52.0 hrs		
114	Concrete for 4 - 25 Mg Tank Foundations; thickness exceeding 500mm	1.1.1.1	Bldg 4.4.1.1		$ -	45%	$ 839.96	$ 31,095.39				$ 2,706.54	$ 1,881.66	$ 26,507.19	73.6 hrs		
115	Connection to main inspection pit (600 dia PVC)	1.4.1.8	Bldg 4.4.1.1	750.00	$ 37,500.00	45%	$ 5,062.50	$ 42,562.50	30%	60%	10%	$ 12,768.75	$ 25,537.50	$ 4,256.25	218.1 hrs		
	Inspection chamber				$ -	45%	$ -	$ -				$ -	$ -	$ -	-		
116	Formwork in Inspection Chamber -Base slab; 250mm thick	1.4.1.8	Bldg 4.4.1.1		$ -	45%	$ 56.90	$ 273.09				$ 183.33	$ 22.92	$ 66.84	5.0 hrs		
117	Formwork in Inspection Chamber - Walls	1.4.1.8	Bldg 4.4.1.1		$ -	45%	$ 3,422.31	$ 17,625.80				$ 11,027.45	$ 1,381.05	$ 5,217.30	299.9 hrs		
118	Formwork in Inspection Chamber -Walls	1.4.1.8	Bldg 4.4.1.1		$ -	45%	$ 3,969.88	$ 20,445.93				$ 12,791.85	$ 1,602.02	$ 6,052.07	347.9 hrs		
119	Formwork in Inspection Chamber - Top Slab; 250mm thick	1.4.1.8	Bldg 4.4.1.1		$ -	45%	$ 112.89	$ 541.85				$ 363.75	$ 45.48	$ 132.62	9.9 hrs		
120	Formwork in Inspection Chamber - Top Slab; 250mm thick	1.4.1.8	Bldg 4.4.1.1		$ -	45%	$ 62.86	$ 301.70				$ 202.54	$ 25.32	$ 73.84	5.5 hrs		
121	Reinforcement in Inspection Chamber (150kgs/m3)	1.4.1.8	Bldg 4.4.1.2		$ -	45%	$ 292.32	$ 2,218.74				$ 941.93	$ 149.94	$ 1,126.88	25.6 hrs		
122	Concrete in Inspection Chamber - Blinding; 150-300mm thick	1.4.1.8	Bldg 4.4.1.1		$ -	45%	$ 10.28	$ 341.75				$ 33.13	$ 4.42	$ 304.20	0.9 hrs		
123	Concrete in Inspection Chamber - Base Slab; 250mm thick	1.4.1.8	Bldg 4.4.1.1		$ -	45%	$ 14.46	$ 459.05				$ 46.59	$ 32.21	$ 380.25	1.3 hrs		
124	Concrete in Inspection Chamber - Walls	1.4.1.8	Bldg 4.4.1.1		$ -	45%	$ 227.44	$ 6,133.35				$ 732.87	$ 506.73	$ 4,893.75	19.9 hrs		
125	Concrete in Inspection Chamber - Walls	1.4.1.8	Bldg 4.4.1.1		$ -	45%	$ 196.07	$ 5,287.37				$ 631.78	$ 436.84	$ 4,218.75	17.2 hrs		
126	Concrete in Inspection Chamber - Top Slab	1.4.1.8	Bldg 4.4.1.1		$ -	45%	$ 17.99	$ 571.09				$ 57.96	$ 40.07	$ 473.06	1.6 hrs		

DNGS Heavy Water Management Building - Construction Cost Estimate

Ref	Item	NRM Ref	PBS	All-in Rate [$/unit]	All-in Total [$]	Indirect Costs % of Labour Total [%]	Indirect Total [$]	Total Cost [$]	All-in Rate Split Lab [%]	Mat [%]	Equip [%]	Labour [$]	Materials [$]	Construction Equipment [$]	Total DFL Hours [hours]	Estimate Class	Assumptions
	Basement Walls				$ -	45%	$ -	$ -				$ -	$ -	$ -	-		
127	Formwork in Dike wall Foundations; rough finish; plane vertical; width exceeding 1.22m	1.3.1.1	Bldg 4.4.1.1		$ -	45%	$ 1,440.94	$ 6,240.46				$ 4,643.02	$ 589.59	$ 1,007.84	126.3 hrs		
128	Formwork in Dike wall Foundations; rough finish; plane vertical; width exceeding 1.22m	1.3.1.1	Bldg 4.4.1.1		$ -	45%	$ 3,149.95	$ 13,641.93				$ 10,149.85	$ 1,288.88	$ 2,203.20	276.0 hrs		
129	Concrete in Dike wall Foundations; thickness exceeding 500mm	1.3.1.1	Bldg 4.4.1.1		$ -	45%	$ 1,048.08	$ 38,800.04				$ 3,377.16	$ 2,347.88	$ 33,075.00	91.8 hrs		
130	Concrete in Dike wall Foundations; thickness exceeding 500mm	1.3.1.1	Bldg 4.4.1.1		$ -	45%	$ 2,010.61	$ 74,432.73				$ 6,478.63	$ 4,504.10	$ 63,450.00	176.2 hrs		
131	Formwork in Dike wall	1.3.1.1	Bldg 4.4.1.1		$ -	45%	$ 12,753.82	$ 65,685.49				$ 41,095.64	$ 5,146.71	$ 19,443.14	1,117.6 hrs		
132	Formwork in Dike wall	1.3.1.1	Bldg 4.4.1.1		$ -	45%	$ 27,880.44	$ 143,591.55				$ 89,836.99	$ 11,250.95	$ 42,503.60	2,443.0 hrs		
133	Reinforcement in Walls/Dikes (@120kgs/M3)	1.3.1.1	Bldg 4.4.1.2		$ -	45%	$ 122,775.49	$ 931,871.32				$ 395,609.90	$ 62,972.91	$ 473,288.51	10,758.2 hrs		
134	Concrete in Dike wall	1.3.1.1	Bldg 4.4.1.1		$ -	45%	$ 9,991.73	$ 269,444.31				$ 32,195.57	$ 22,261.24	$ 214,987.50	875.5 hrs		
135	Concrete in Dike wall	1.3.1.1	Bldg 4.4.1.1		$ -	45%	$ 19,167.81	$ 516,893.16				$ 61,762.93	$ 42,705.23	$ 412,425.00	1,679.6 hrs		
	Concrete Ancillaries				$ -	45%	$ -	$ -				$ -	$ -	$ -	-		
136	Step ladders inside Inspection Chamber	1.4.1.8	Bldg 4.4.3.3	53.74	$ 2,687.03	45%	$ 362.75	$ 3,049.77	30%	60%	10%	$ 914.93	$ 1,829.86	$ 304.98	14.7 hrs		
137	Manhole cover to inspection chamber; Complete with frame; Bed and set in concrete; access cover and frame	1.4.1.8	Bldg 4.4.3.3	544.50	$ 544.50	45%	$ 73.51	$ 618.01	30%	60%	10%	$ 185.40	$ 370.80	$ 61.80	3.0 hrs		
138	Rock anchors; 25mm diameter; 2m length; including drilling, steel and grout	1.4.1.9	Bldg 4.4.1.2	50.00	$ 600.00	45%	$ 162.00	$ 762.00	60%	30%	10%	$ 457.20	$ 228.60	$ 76.20	7.8 hrs		
139	Rock Anchors 25mm - 2M Deep; including drilling, steel and grout	1.1.1.1	Bldg 4.4.1.2	50.00	$ 21,050.00	45%	$ 5,683.50	$ 26,733.50	60%	30%	10%	$ 16,040.10	$ 8,020.05	$ 2,673.35	274.0 hrs		
140	Rock anchors 25mm 2M length for Dike wall		Bldg 4.4.1.2	50.00	$ 7,250.00	45%	$ 978.75	$ 8,228.75	30%	60%	10%	$ 2,468.63	$ 4,937.25	$ 822.88	42.2 hrs		
141	Insulation at Basement upto 1.5 M; boards; polystherene standard grade; fixing with adhesive; to walls; 40mm thick		Bldg 4.4.5.1		$ -	45%	$ 1,067.67	$ 6,233.11				$ 3,440.26	$ -	$ 2,792.86	99.3 hrs		
142	Insulation at Loading bay walls; boards; polystherene standard grade; fixing with adhesive; to floors; 40mm thick		Bldg 4.4.5.1		$ -	45%	$ 98.53	$ 575.20				$ 317.47	$ -	$ 257.73	9.2 hrs		
143	Insulation at Loading bay slab; boards; polystherene standard grade; fixing with adhesive; to walls; 40mm thick		Bldg 4.4.5.1		$ -	45%	$ 22.17	$ 168.49				$ 71.43	$ -	$ 97.06	2.1 hrs		
144	Trace heating to Loading bay Ramp & slab		Bldg 4.4.5.1	261.83	$ 23,041.04	45%	$ 3,110.54	$ 26,151.58	30%	60%	10%	$ 7,845.47	$ 15,690.95	$ 2,615.16	115.0 hrs		
					$ -	45%	$ -	$ -				$ -	$ -	$ -	-		
	Sub-Total				**$ 4,419,301.33**		**$ 1,595,415.75**	**$ 11,691,224.08**				**$ 4,774,117.70**	**$ 2,534,689.27**	**$ 4,382,417.12**	**117,123.5 hrs**		
	SUPERSTRUCTURE																
	Insitu concrete walls to first floor				$ -	45%	$ -	$ -				$ -	$ -	$ -	-		
145	Formwork - wall above Lvl 100.00 - 5 M high external; basic finish; height 3m above floor level	2.5.1.1	Bldg 4.4.1.1		$ -	45%	$ 132,842.79	$ 449,636.76				$ 428,048.99	$ -	$ 21,587.78	11,640.3 hrs		
146	Reinforcement in concrete walls; 120kgs/m3; 12 mm diameter; bent		Bldg 4.4.1.2		$ -	45%	$ 23,442.85	$ 92,627.78				$ 75,538.06	$ -	$ 17,089.72	2,054.2 hrs		
147	Concrete wall above Lvl 100.00 - 5 M high external; grade C40	2.5.1.1	Bldg 4.4.1.1		$ -	45%	$ 22,221.86	$ 110,135.03				$ 71,603.78	$ -	$ 38,531.25	1,947.2 hrs		
148	Formwork Columns (400x400) - wall above Lvl 100.00 -7.8 M high	2.5.1.1	Bldg 4.4.1.1		$ -	45%	$ 36,303.90	$ 118,839.92				$ 116,979.23	$ -	$ 1,860.69	3,181.1 hrs		
149	Reinforcement for Columns (400x400) @ 150 kgs/m3; 12mm diameter; bent		Bldg 4.4.1.2		$ -	45%	$ 2,562.63	$ 10,125.50				$ 8,257.36	$ -	$ 1,868.14	224.6 hrs		
150	Columns (400x400) - Concrete wall above Lvl 100.00 - 7.8 M high	2.5.1.1	Bldg 4.4.1.1		$ -	45%	$ 3,160.57	$ 13,553.67				$ 10,184.07	$ -	$ 3,369.60	276.9 hrs		
151	Concrete topping finishes - Hardeners; Two coats epoxy anti slip floor paint on screeded surfaces	2.2.1.1	Bldg 4.4.1.1		$ -	45%	$ 12,391.03	$ 59,781.66				$ 39,926.66	$ -	$ 19,855.00	1,085.8 hrs		
	Insitu concrete upper floors - Beams				$ -	45%	$ -	$ -				$ -	$ -	$ -	-		
152	Formwork for Beams (300x750)	2.2.1.1	Bldg 4.4.1.1		$ -	45%	$ 15,464.58	$ 51,957.57				$ 49,830.31	$ -	$ 2,127.26	1,355.1 hrs		
153	Reinforcement in Beams (300x750) @ 200kg/m3	2.2.1.1	Bldg 4.4.1.2		$ -	45%	$ 3,878.62	$ 15,325.28				$ 12,497.78	$ -	$ 2,827.50	339.9 hrs		
154	Concrete in Beams (300x750)	2.2.1.1	Bldg 4.4.1.1		$ -	45%	$ 3,561.34	$ 15,272.32				$ 11,475.44	$ -	$ 3,796.88	312.1 hrs		
155	35mpa Concrete in Suspended slab at Lvl 107.8 - 300mm thk	2.2.1.1	Bldg 4.4.1.1		$ -	45%	$ 24,375.43	$ 123,093.04				$ 78,543.04	$ -	$ 44,550.00	2,135.9 hrs		
156	Formwork in Suspended slab at Lvl 107.8 - 300mm thk	2.2.1.1	Bldg 4.4.1.1		$ -	45%	$ 104,779.82	$ 347,795.13				$ 337,623.87	$ -	$ 10,171.26	9,181.3 hrs		
157	Formwork (sides) in Suspended slab at Lvl 107.8 - 300mm thk	2.2.1.1	Bldg 4.4.1.1		$ -	45%	$ 4,905.60	$ 16,283.14				$ 15,806.94	$ -	$ 476.20	429.9 hrs		
158	Reinforcement in Suspended slab at Lvl 107.8 @ 150kgs/m3	2.2.1.1	Bldg 4.4.1.2		$ -	45%	$ 33,880.90	$ 133,870.80				$ 109,171.79	$ -	$ 24,699.01	2,968.8 hrs		
159	35 mpa Concrete in Beams External at Lvl 107.80 (350x700)	2.2.1.1	Bldg 4.4.1.1		$ -	45%	$ 3,043.23	$ 13,050.48				$ 9,805.98	$ -	$ 3,244.50	266.7 hrs		
160	35 mpa Concrete in Beams Internal at Lvl 107.80 (350x700)	2.2.1.1	Bldg 4.4.1.1		$ -	45%	$ 2,171.63	$ 9,312.72				$ 6,997.47	$ -	$ 2,315.25	190.3 hrs		
161	Formwork for Beams External at Lvl 107.80 (350x700)	2.2.1.1	Bldg 4.4.1.1		$ -	45%	$ 9,484.94	$ 31,867.31				$ 30,562.59	$ -	$ 1,304.72	831.1 hrs		
162	Formwork for Beams Internal at Lvl 107.80 (350x700)	2.2.1.1	Bldg 4.4.1.1		$ -	45%	$ 6,735.68	$ 22,630.41				$ 21,703.87	$ -	$ 926.54	590.2 hrs		
163	Reinforcement in Beams at Lvl 107.8 @ 150kgs/m3	2.2.1.1	Bldg 4.4.1.2		$ -	45%	$ 7,399.04	$ 29,235.22				$ 23,841.35	$ -	$ 5,393.86	648.3 hrs		
164	35 mpa Concrete in Column footing (1.2x1.2x1.5) 6 ea	2.2.1.1	Bldg 4.4.1.1		$ -	45%	$ 110.88	$ 3,520.27				$ 357.29	$ 246.99	$ 2,916.00	9.7 hrs		
165	Rock anchors 25mm 2M length for Col footing 9ea/6ftgs	2.2.1.1	Bldg 4.4.1.2	50.00	$ 2,700.00	45%	$ 364.50	$ 3,064.50	30%	60%	10%	$ 919.35	$ 1,838.70	$ 306.45	14.8 hrs		
166	Reinforcement in Col footing at 120kgs/m3	2.2.1.1	Bldg 4.4.1.2		$ -	45%	$ 1,774.13	$ 7,009.96				$ 5,716.63	$ -	$ 1,293.33	155.5 hrs		
167	35 mpa Concrete in Columns (600x600) lvl 87.00 to lvl100.00	2.2.1.1	Bldg 4.4.1.1		$ -	45%	$ 5,743.74	$ 24,631.20				$ 18,507.60	$ -	$ 6,123.60	503.3 hrs		
168	Formwork for Columns (600x600)	2.2.1.1	Bldg 4.4.1.1		$ -	45%	$ 43,983.57	$ 143,979.13				$ 141,724.83	$ -	$ 2,254.30	3,854.1 hrs		
169	Reinforcement in Columns @ 150kgs/m3	2.2.1.1	Bldg 4.4.1.2		$ -	45%	$ 4,657.08	$ 18,401.15				$ 15,006.16	$ -	$ 3,394.99	408.1 hrs		
170	35 mpa Concrete in Columns (450x450) at Lvl 100.00 to Lvl 107.80	2.2.1.1	Bldg 4.4.1.1		$ -	45%	$ 1,871.84	$ 8,027.13				$ 6,031.49	$ -	$ 1,995.64	164.0 hrs		
171	Formwork for Columns (450x450)	2.2.1.1	Bldg 4.4.1.1		$ -	45%	$ 19,111.91	$ 62,562.36				$ 61,582.81	$ -	$ 979.55	1,674.7 hrs		
172	Reinforcement in Columns @ 150kgs/m3	2.2.1.1	Bldg 4.4.1.2		$ -	45%	$ 1,517.71	$ 5,996.80				$ 4,890.40	$ -	$ 1,106.40	133.0 hrs		
173	Reinforcement at Column locations in Dike walls (ext) @150kgs/m3	2.2.1.1	Bldg 4.4.1.2		$ -	45%	$ 5,475.70	$ 21,635.68				$ 17,643.93	$ -	$ 3,991.76	479.8 hrs		
	Insitu concrete upper floor - Ground floor slab				$ -	45%	$ -	$ -				$ -	$ -	$ -	-		
174	Formwork for Suspended slab at 100.00	2.2.1.1	Bldg 4.4.1.1		$ -	45%	$ 165,544.18	$ 549,489.96				$ 533,420.14	$ -	$ 16,069.82	14,505.8 hrs		
175	Reinforcement at Suspended slab at 100.00 (120Kg/m3)	2.2.1.1	Bldg 4.4.1.2		$ -	45%	$ 50,308.00	$ 198,777.86				$ 162,103.57	$ -	$ 36,674.29	4,408.2 hrs		

DNGS Heavy Water Management Building - Construction Cost Estimate

Ref	Item	NRM Ref	PBS	All-in Rate [$/unit]	All-in Total [$]	Indirect Costs % of Labour Total [%]	Indirect Total [$]	Total Cost [$]	All-in Rate Split Lab [%]	Mat [%]	Equip [%]	Labour [$]	Materials [$]	Construction Equipment [$]	Total DFL Hours [hours]	Estimate Class	Assumptions
176	Concrete in Suspended slab at LVL-100.00; thickness 150-450mm	2.2.1.1	Bldg 4.4.1.1		$ -	45%	$ 45,242.27	$ 228,468.14				$ 145,780.64	$ -	$ 82,687.50	3,964.4 hrs		
177	Less Concrete at Openings in slab - Elevators/Staircase	2.2.1.1	Bldg 4.4.1.1		$ -	45%	$ 123.11	$ 621.68				$ 396.68	$ -	$ 225.00	10.8 hrs		
	Insitu concrete loading bay				$ -	45%	$ -	$ -				$ -	$ -	$ -	-		
178	Formwork for Ramps to Loading Bay; sloping	5.10.7.1	Bldg 4.4.1.1		$ -	45%	$ 2,298.65	$ 7,611.62				$ 7,406.77	$ -	$ 204.85	201.4 hrs		
179	Formwork for Walls & Fdn to Loading Bay	5.10.7.1	Bldg 4.4.1.1		$ -	45%	$ 3,296.83	$ 11,158.87				$ 10,623.11	$ -	$ 535.76	288.9 hrs		
180	Formwork for Pits at Loading Bay	5.10.7.1	Bldg 4.4.1.1		$ -	45%	$ 11,635.86	$ 39,384.24				$ 37,493.34	$ -	$ 1,890.90	1,019.6 hrs		
181	Reinforcement for Loading Bay Walls/Pit/Ramp (120kgs/m3)	5.10.7.1	Bldg 4.4.1.2		$ -	45%	$ 136,892.53	$ 540,892.12				$ 441,098.14	$ -	$ 99,793.98	11,995.2 hrs		
182	Concrete for Ramps to Loading Bay; sloping	5.10.7.1	Bldg 4.4.1.1		$ -	45%	$ 5,763.75	$ 28,247.07				$ 18,572.07	$ -	$ 9,675.00	505.0 hrs		
183	Concrete for Walls at Loading Bay	5.10.7.1	Bldg 4.4.1.1		$ -	45%	$ 1,038.10	$ 5,144.99				$ 3,344.99	$ -	$ 1,800.00	91.0 hrs		
184	Concrete for Pits at Loading Bay	5.10.7.1	Bldg 4.4.1.1		$ -	45%	$ 4,022.64	$ 19,936.85				$ 12,961.85	$ -	$ 6,975.00	352.5 hrs		
	Miscellaneous concrete works				$ -	45%	$ -	$ -				$ -	$ -	$ -	-		
185	Formwork for Kerb walls at Cleaning at Drum Cleaning areas		Bldg 4.4.1.1		$ -	45%	$ 2,327.17	$ 7,876.85				$ 7,498.67	$ -	$ 378.18	203.9 hrs		
186	Rebar for Kerb walls at Cleaning at Drum Cleaning areas		Bldg 4.4.1.2		$ -	45%	$ 328.54	$ 1,298.14				$ 1,058.64	$ -	$ 239.51	28.8 hrs		
187	Concrete at Kerb walls at Cleaning at Drum Cleaning areas		Bldg 4.4.1.1		$ -	45%	$ 467.15	$ 2,315.25				$ 1,505.25	$ -	$ 810.00	40.9 hrs		
188	Nosing angle SS at Kerb walls at Cleaning at Drum Cleaning areas; angle section bearers; 90 x 90 x 6mm		Bldg 4.4.3.1		$ -	45%	$ 2,357.59	$ 18,798.21				$ 7,596.69	$ -	$ 11,201.52	206.6 hrs		
189	Precast concrete at mid landing slab inside Inspection chamber		Bldg 4.4.1.1	350.00	$ 1,260.00	45%	$ 170.10	$ 1,430.10	30%	60%	10%	$ 429.03	$ 858.06	$ 143.01	6.9 hrs		
190	Precast concrete cover slab to inspection chamber		Bldg 4.4.1.1	4,500.00	$ 4,500.00	45%	$ 607.50	$ 5,107.50	30%	60%	10%	$ 1,532.25	$ 3,064.50	$ 510.75	24.7 hrs		
191	Precast concrete inspection pit; 15m x 2.5m x 2.5m		Bldg 4.4.1.1	3,500.00	$ 52,500.00	45%	$ 7,087.50	$ 59,587.50	30%	60%	10%	$ 17,876.25	$ 35,752.50	$ 5,958.75	287.7 hrs		
	Structural steel frame				$ -	45%	$ -	$ -				$ -	$ -	$ -	-		
192	Base plates for Steel frames at Lvl 107.8 (300x300)	2.1.1.1	Bldg 4.4.3.3	120.00	$ 2,160.00	45%	$ 291.60	$ 2,451.60	30%	60%	10%	$ 735.48	$ 1,470.96	$ 245.16	10.9 hrs		
193	Foundation Bolts 20mm for Steel frames at Lvl 107.8 (300x300)	2.1.1.1	Bldg 4.4.1.2	45.00	$ 3,240.00	45%	$ 437.40	$ 3,677.40	30%	60%	10%	$ 1,103.22	$ 2,206.44	$ 367.74	16.4 hrs		
194	Grouting of Base plates (300x300)	2.1.1.1	Bldg 4.4.1.3	120.00	$ 2,160.00	45%	$ 291.60	$ 2,451.60	30%	60%	10%	$ 735.48	$ 1,470.96	$ 245.16	10.9 hrs		
195	Intumescent painting to Steel Columns; paint fire protection (60 minutes); spray applied	2.1.1.2	Bldg 4.4.5.3	22.72	$ 3,299.02	45%	$ 445.37	$ 3,744.38	30%	60%	10%	$ 1,123.32	$ 2,246.63	$ 374.44	18.6 hrs		
	Structural Steel frame work Lvl 107.80 to roof (7.2M Height)				$ -	45%	$ -	$ -				$ -	$ -	$ -	-		
196	Steel members in frame work (15kgs/sqft)		Bldg 4.4.3.1	3,130.88	$ 344,396.25	45%	$ 46,493.49	$ 390,889.74	30%	60%	10%	$ 117,266.92	$ 234,533.85	$ 39,088.97	1,743.9 hrs		
197	Roof trusses at 115.00m level; Steel roof trusses and beams; thermal and acoustic insulation;aluminum profiled composite cladding	2.3.1.1	Bldg 4.4.3.1	399.30	$ 243,573.00	45%	$ 32,882.36	$ 276,455.36	30%	60%	10%	$ 82,936.61	$ 165,873.21	$ 27,645.54	1,233.4 hrs		
	Fire protection to structural steelwork				$ -	45%	$ -	$ -				$ -	$ -	$ -	-		
198	Fire protection to Steel frame	2.1.1.1	Bldg 4.4.5.3	22.72	$ 19,994.04	45%	$ 2,699.20	$ 22,693.24	30%	60%	10%	$ 6,807.97	$ 13,615.94	$ 2,269.32	112.7 hrs		
199	Fire protection to Steel frame	2.1.1.1	Bldg 4.4.5.3	22.72	$ 14,995.53	45%	$ 2,024.40	$ 17,019.93	30%	60%	10%	$ 5,105.98	$ 10,211.96	$ 1,701.99	84.5 hrs		
	Hoist gantries				$ -	45%	$ -	$ -				$ -	$ -	$ -	-		
200	Structural Steel Gantry for Hoists 1 T & 5 T	2.1.1.1	Bldg 4.4.3.2	3.13	$ 30,306.87	45%	$ 4,091.43	$ 34,398.30	30%	60%	10%	$ 10,319.49	$ 20,638.98	$ 3,439.83	153.5 hrs		
	Insitu concrete upper floors				$ -	45%	$ -	$ -				$ -	$ -	$ -	-		
201	Surface finish to insitu concrete; Two coats epoxy anti slip floor paint on screeded surfaces	2.2.2.1	Bldg 4.4.1.1		$ -	45%	$ 10,457.07	$ 50,451.08				$ 33,695.00	$ -	$ 16,756.08	916.3 hrs		
	Tank inspection platforms				$ -	45%	$ -	$ -				$ -	$ -	$ -	-		
202	Open grid flooring for inspection around tanks on 94.00m level	2.1.1.1	Bldg 4.4.3.1	502.30	$ 296,357.74	45%	$ 40,008.29	$ 336,366.03	30%	60%	10%	$ 100,909.81	$ 201,819.62	$ 33,636.60	1,500.7 hrs		
	Roof structure				$ -	45%	$ -	$ -				$ -	$ -	$ -	-		
203	Built up Roof at Lvl 115.00m; steel roof trusses and beams; thermal and acoustic insulation; aluminum profiled composite cladding	2.3.1.3	Bldg 4.4.5.1	399.30	$ 239,580.00	45%	$ 32,343.30	$ 271,923.30	30%	60%	10%	$ 81,576.99	$ 163,153.98	$ 27,192.33	1,397.4 hrs		
204	Waterproofing to Roof	2.3.2.1	Bldg 4.4.5.1	121.95	$ 87,805.08	45%	$ 11,853.69	$ 99,658.77	30%	60%	10%	$ 29,897.63	$ 59,795.26	$ 9,965.88	512.1 hrs		
205	Waterproofing to openings	2.3.2.1	Bldg 4.4.5.1	134.15	$ 2,146.35	45%	$ 289.76	$ 2,436.10	30%	60%	10%	$ 730.83	$ 1,461.66	$ 243.61	12.5 hrs		
206	Metal Flashings	2.3.2.1	Bldg 4.4.3.1	147.56	$ 32,315.93	45%	$ 4,362.65	$ 36,678.58	30%	60%	10%	$ 11,003.57	$ 22,007.15	$ 3,667.86	188.5 hrs		
207	Roof anchors SS on roof (6 nrs)		Bldg 4.4.3.1	4,500.00	$ 27,000.00	45%	$ 3,645.00	$ 30,645.00	30%	60%	10%	$ 9,193.50	$ 18,387.00	$ 3,064.50	136.7 hrs		
208	600 x 600 x 2mm plain Cement tiles on roof at pathways c/w spacers & underpads		Bldg 4.4.6.6	42.19	$ 5,771.66	45%	$ 779.17	$ 6,550.83	30%	60%	10%	$ 1,965.25	$ 3,930.50	$ 655.08	33.7 hrs		
	Rainwater goods				$ -	45%	$ -	$ -				$ -	$ -	$ -	-		
209	Rainwater down take pipes; fixed to backgrounds; including offsets and shoes; 110mm diameter uPVC	2.3.4.2	Bldg 4.4.5.1	22.87	$ 2,058.21	45%	$ 277.86	$ 2,336.07	30%	60%	10%	$ 700.82	$ 1,401.64	$ 233.61	12.0 hrs		
	Cladding				$ -	45%	$ -	$ -				$ -	$ -	$ -	-		
210	Metal cladding External walls at Lvl 105.00 to 107.80; Metal profiled cladding; coated steel profiled cladding on steel rails; insulated and built up system	2.5.1.1	Bldg 4.4.3.4	82.58	$ 42,992.45	45%	$ 5,803.98	$ 48,796.43	30%	60%	10%	$ 14,638.93	$ 29,277.86	$ 4,879.64	216.5 hrs		
211	Metal cladding External walls at Lvl 107.80 to 115.00; Metal profiled cladding; coated steel profiled cladding on steel rails; insulated and built up system	2.5.1.1	Bldg 4.4.3.4	82.58	$ 92,839.25	45%	$ 12,533.30	$ 105,372.54	30%	60%	10%	$ 31,611.76	$ 63,223.53	$ 10,537.25	467.5 hrs		
212	Metal cladding external walls to staircase above 115.00m level; Metal profiled cladding; coated steel profiled cladding on steel rails; insulated and built up system	2.5.1.1	Bldg 4.4.1.1	82.58	$ 4,162.16	45%	$ 561.89	$ 4,724.05	30%	60%	10%	$ 1,417.21	$ 2,834.43	$ 472.40	21.0 hrs		
					$ -	45%	$ -	$ -				$ -	$ -	$ -	-		
	Sub-Total				**$ 1,558,113.52**		**$ 1,189,301.79**	**$ 5,439,089.21**				**$ 3,684,952.92**	**$ 1,061,322.29**	**$ 692,813.99**	**93,998.5 hrs**		
	STAIRCASES																
213	Light duty metal staircase; galvanised finish; perforated treads; no risers; balustrades and handrails; 3m rise; straight; 900mm wide	2.44.1	Bldg 4.4.3.3	6,715.50	$ 53,724.00	45%	$ 7,252.74	$ 60,976.74	30%	60%	10%	$ 18,293.02	$ 36,586.04	$ 6,097.67	272.0 hrs		
214	plus for each 300mm variation in storey height	2.44.1	Bldg 4.4.3.3	480.98	$ 6,733.65	45%	$ 909.04	$ 7,642.69	30%	60%	10%	$ 2,292.81	$ 4,585.62	$ 764.27	34.1 hrs		
215	Light duty spiral metal staircase; galvanised finish; perforated treads; no risers; balustrades and handrails; 3m rise; straight; 900mm wide - Lvl 87.00 to Lvl 94.00 at Platform -Emergency	2.44.1	Bldg 4.4.3.3	7,623.00	$ 15,246.00	45%	$ 2,058.21	$ 17,304.21	30%	60%	10%	$ 5,191.26	$ 10,382.53	$ 1,730.42	77.2 hrs		

DNGS Heavy Water Management Building - Construction Cost Estimate

Ref	Item	NRM Ref	PBS	All-in Rate [$/unit]	All-in Total [$]	Indirect Costs % of Labour Total [%]	Indirect Total [$]	Total Cost [$]	All-in Rate Split Lab [%]	Mat [%]	Equip [%]	Labour [$]	Materials [$]	Construction Equipment [$]	Total DFL Hours [hours]	Estimate Class	Assumptions
216	plus for each 300mm variation in storey height	2.44.1	Bldg 4.4.3.3	598.95	$ 1,796.85	45%	$ 242.57	$ 2,039.42	30%	60%	10%	$ 611.83	$ 1,223.65	$ 203.94	9.1 hrs		
217	Landing; chequer plate; galvanised; over 300mm wide; 6mm thick	2.44.1	Bldg 4.4.3.3	502.30	$ 16,073.64	45%	$ 2,169.94	$ 18,243.58	30%	60%	10%	$ 5,473.07	$ 10,946.15	$ 1,824.36	81.4 hrs		
218	Landing; chequer plate; galvanised; over 300mm wide; 6mm thick	2.44.1	Bldg 4.4.3.3	502.30	$ 16,073.64	45%	$ 2,169.94	$ 18,243.58	30%	60%	10%	$ 5,473.07	$ 10,946.15	$ 1,824.36	81.4 hrs		
					$ -	45%	$ -	$ -				$ -	$ -	$ -	-		
	Sub-Total				**$ 109,647.78**		**$ 14,802.45**	**$ 124,450.23**				**$ 37,335.07**	**$ 74,670.14**	**$ 12,445.02**	**555.2 hrs**		
	WINDOWS AND EXTERNAL DOORS																
219	Aluminium Windows (Offices); standard windows; anodised finish; double glazed	2.6.1.1	Bldg 4.4.6.2-O	807.68	$ 18,172.69	45%	$ 2,453.31	$ 20,626.00	30%	60%	10%	$ 6,187.80	$ 12,375.60	$ 2,062.60	102.4 hrs		
220	Aluminium Windows (Drum Handling); standard windows; anodised finish; double glazed	2.6.1.1	Bldg 4.4.6.2	807.68	$ 10,903.61	45%	$ 1,471.99	$ 12,375.60	30%	60%	10%	$ 3,712.68	$ 7,425.36	$ 1,237.56	61.4 hrs		
221	Aluminium Windows (HVAC Rm); standard windows; anodised finish; double glazed	2.6.1.1	Bldg 4.4.6.2	807.68	$ 10,903.61	45%	$ 1,471.99	$ 12,375.60	30%	60%	10%	$ 3,712.68	$ 7,425.36	$ 1,237.56	61.4 hrs		
222	Aluminium Windows (Roof); standard windows; anodised finish; double glazed	2.6.1.1	Bldg 4.4.6.2	807.68	$ 3,634.54	45%	$ 490.66	$ 4,125.20	30%	60%	10%	$ 1,237.56	$ 2,475.12	$ 412.52	20.5 hrs		
223	Exterior Doors c/w Frame door; single external steel door, including frame, ironmongery, powder coated finish	2.6.2.1	Bldg 4.4.6.1	1,334.03	$ 8,004.15	45%	$ 1,080.56	$ 9,084.71	30%	60%	10%	$ 2,725.41	$ 5,450.83	$ 908.47	45.1 hrs		
224	Rolling Shutters and collapsible gtes; galvanised steel; 1 hr fire resisting; self coiling; activated by fusible link; fixing with bolts; 2400 mm x 2750 mm	2.6.1.3	Bldg 4.4.6.1	3,244.46	$ 6,488.92	45%	$ 876.00	$ 7,364.92	30%	60%	10%	$ 2,209.48	$ 4,418.95	$ 736.49	36.6 hrs		
					$ -	45%	$ -	$ -				$ -	$ -	$ -	-		
	Sub-Total				**$ 58,107.52**		**$ 7,844.51**	**$ 65,952.03**				**$ 19,785.61**	**$ 39,571.22**	**$ 6,595.20**	**327.4 hrs**		
	INTERNAL WALLS AND PARTITIONS																
	Internal walls and partitions				$ -	45%	$ -	$ -				$ -	$ -	$ -	-		
225	Concrete filled Hollow Block Masonry 200mm(Offices)	2.7.1.1	Bldg 4.4.2.2-O		$ -	45%	$ 9,554.36	$ 43,090.50				$ 30,786.26	$ -	$ 12,304.23	846.0 hrs		
226	Concrete filled Hollow Block Masonry 200mm(Clean up Rm)	2.7.1.1	Bldg 4.4.2.2		$ -	45%	$ 4,725.81	$ 21,313.58				$ 15,227.61	$ -	$ 6,085.97	418.4 hrs		
227	Hollow Block Masonry 150 mm(HVAC/Elec))	2.7.1.1	Bldg 4.4.2.2		$ -	45%	$ 2,912.71	$ 17,844.90				$ 9,385.39	$ 817.34	$ 7,642.17	257.9 hrs		
228	GWB on side of Block Masonry inside office; Metal stud and plasterboard partitions; 90mm thick; 1 layer 13mm board each side; tape and fill joints; emulsion finish	2.7.1.1	Bldg 4.4.3.5-O	98.01	$ 16,980.23	45%	$ 2,292.33	$ 19,272.56	30%	60%	10%	$ 5,781.77	$ 11,563.54	$ 1,927.26	95.7 hrs		
229	GWB (Acoustic) wall inside office; Metal stud and plasterboard partitions; 90mm thick; 1 layer 13mm board each side; tape and fill joints; emulsion finish	2.7.1.1	Bldg 4.4.3.5-O	117.98	$ 19,200.43	45%	$ 2,592.06	$ 21,792.49	30%	60%	10%	$ 6,537.75	$ 13,075.49	$ 2,179.25	108.2 hrs		
230	Metal Stud Cement Board walls (Washroom)	2.7.1.1	Bldg 4.4.3.3-O	141.57	$ 10,978.75	45%	$ 1,482.13	$ 12,460.89	30%	60%	10%	$ 3,738.27	$ 7,476.53	$ 1,246.09	61.9 hrs		
231	Hollow Block Masonry 150mm in Battery room (UPS system)	2.7.1.1	Bldg 4.4.2.2		$ -	45%	$ 460.99	$ 2,824.29				$ 1,485.41	$ 129.36	$ 1,209.52	40.8 hrs		
	Surface finishes to internal walls and partitions				$ -	45%	$ -	$ -				$ -	$ -	$ -	-		
232	Masonry wall Finishes; Two coats emulsion paint finish	3.1.1.1	Bldg 4.4.6.6		$ -	45%	$ 13,970.09	$ 47,436.57				$ 45,014.73	$ -	$ 2,421.84	1,258.6 hrs		
233	GWB Wall Finishes	3.1.1.1	Bldg 4.4.6.15-O		$ -	45%	$ 12,093.63	$ 42,410.70				$ 38,968.37	$ -	$ 3,442.33	1,089.6 hrs		
234	Finishes to Concrete walls	3.1.1.1	Bldg 4.4.6.6		$ -	45%	$ 31,901.12	$ 108,322.83				$ 102,792.49	$ -	$ 5,530.34	2,874.1 hrs		
235	Epoxy painting to walls at Storage area		Bldg 4.4.6.6		$ -	45%	$ 21,163.68	$ 102,106.10				$ 68,194.08	$ -	$ 33,912.02	1,854.5 hrs		
236	Ceramic to walls at Washrooms (male & female)		Bldg 4.4.6.15-O		$ -	45%	$ 1,025.19	$ 4,208.33				$ 3,303.37	$ -	$ 904.96	92.4 hrs		
237	Ceramic to walls at Washrooms (male & female)		Bldg 4.4.6.15-O		$ -	45%	$ 284.77	$ 1,168.98				$ 917.60	$ -	$ 251.38	25.7 hrs		
238	Ceramic to walls at Washrooms (male & female)		Bldg 4.4.6.15-O		$ -	45%	$ 56.95	$ 233.80				$ 183.52	$ -	$ 50.28	5.1 hrs		
					$ -	45%	$ -	$ -				$ -	$ -	$ -	-		
	2.8 INTERNAL DOORS				$ -	45%	$ -	$ -				$ -	$ -	$ -	-		
239	Internal Doors c/w Frames (Offices); Standard softwood doors and hardwood frames; including lintel; ironmongery and painting; flush; solid core; hardwood faced	2.8.1.2	Bldg 4.4.6.1-O	843.98	$ 4,219.88	45%	$ 569.68	$ 4,789.56	30%	60%	10%	$ 1,436.87	$ 2,873.73	$ 478.96	23.8 hrs		
240	Internal Doors c/w Frames (Washroom); Standard softwood doors and hardwood frames; including lintel; ironmongery and painting; flush; solid core; single leaf	2.8.1.1	Bldg 4.4.6.1-O	816.75	$ 1,633.50	45%	$ 220.52	$ 1,854.02	30%	60%	10%	$ 556.21	$ 1,112.41	$ 185.40	9.2 hrs		
241	Internal Doors c/w Frames (HVAC); Softwood doors and hardwood frames; including lintel; ironmongery, painting and polishing solid core; heavy duty; single leaf	2.8.1.2	Bldg 4.4.6.1	1,361.25	$ 5,445.00	45%	$ 735.08	$ 6,180.08	30%	60%	10%	$ 1,854.02	$ 3,708.05	$ 618.01	30.7 hrs		
242	Fire Resistant doors c/w Frames; Softwood doors and hardwood frames; including lintel; ironmongery, painting and polishing flush; 1 hr fire resisting; single leaf	2.8.1.2	Bldg 4.4.6.1	2,132.63	$ 8,530.50	45%	$ 1,151.62	$ 9,682.12	30%	60%	10%	$ 2,904.64	$ 5,809.27	$ 968.21	48.1 hrs		
243	Internal Doors c/w Frames (Clean up room); Softwood doors and hardwood frames; including lintel; ironmongery, painting and polishing solid core; heavy duty; single leaf	2.8.1.2	Bldg 4.4.6.1	1,361.25	$ 2,722.50	45%	$ 367.54	$ 3,090.04	30%	60%	10%	$ 927.01	$ 1,854.02	$ 309.00	15.3 hrs		
244	New door for Access to new building from Exstg Bldg; Softwood doors and hardwood frames; including lintel; ironmongery, painting and polishing flush; 1 hr fire resisting; single leaf	2.8.1.2	Bldg 4.4.6.1	2,132.63	$ 6,397.88	45%	$ 863.71	$ 7,261.59	30%	60%	10%	$ 2,178.48	$ 4,356.95	$ 726.16	36.0 hrs		
245	Automatic door; magnetic locks	2.8.1.2	Bldg 4.4.6.1	600.00	$ 10,800.00	45%	$ 1,458.00	$ 12,258.00	30%	60%	10%	$ 3,677.40	$ 7,354.80	$ 1,225.80	60.9 hrs		
					$ -	45%	$ -	$ -				$ -	$ -	$ -	-		
	Internal floor finishes				$ -	45%	$ -	$ -				$ -	$ -	$ -	-		
246	Cement and sand (1:3) screeds; 50mm thick		Bldg 4.4.6.3	22.69	$ 2,268.75	45%	$ 306.28	$ 2,575.03	30%	60%	10%	$ 772.51	$ 1,545.02	$ 257.50	12.8 hrs		
247	Two coats of epoxy anti-slip floor paint on screed		Bldg 4.4.6.3	47.19	$ 4,719.00	45%	$ 637.07	$ 5,356.07	30%	60%	10%	$ 1,606.82	$ 3,213.64	$ 535.61	26.6 hrs		
248	Cement and sand (1:3) screeds; 50mm thick		Bldg 4.4.6.3	22.69	$ 12,024.38	45%	$ 1,623.29	$ 13,647.67	30%	60%	10%	$ 4,094.30	$ 8,188.60	$ 1,364.77	67.8 hrs		
249	Two coats of epoxy anti-slip floor paint on screed		Bldg 4.4.6.3	47.19	$ 25,010.70	45%	$ 3,376.44	$ 28,387.14	30%	60%	10%	$ 8,516.14	$ 17,032.29	$ 2,838.71	140.9 hrs		
250	Cement and sand (1:3) screeds; 50mm thick		Bldg 4.4.6.3-O	22.69	$ 4,537.50	45%	$ 612.56	$ 5,150.06	30%	60%	10%	$ 1,545.02	$ 3,090.04	$ 515.01	25.6 hrs		
251	Heavy duty carpet tiles; to cement and sand base - (Offices)		Bldg 4.4.6.3-O		$ -	45%	$ 2,725.18	$ 15,123.74				$ 8,781.14	$ -	$ 6,342.60	233.2 hrs		
252	Cement and sand (1:3) screeds; 50mm thick		Bldg 4.4.6.3-O	22.69	$ 1,134.38	45%	$ 153.14	$ 1,287.52	30%	60%	10%	$ 386.25	$ 772.51	$ 128.75	6.4 hrs		

DNGS Heavy Water Management Building - Construction Cost Estimate

Ref	Item	NRM Ref	PBS	All-in Rate [$/unit]	All-in Total [$]	Indirect Costs % of Labour Total [%]	Indirect Total [$]	Total Cost [$]	All-in Rate Split Lab [%]	Mat [%]	Equip [%]	Labour [$]	Materials [$]	Construction Equipment [$]	Total DFL Hours [hours]	Estimate Class	Assumptions
253	Glazed ceramic floor tile; anti-slip tiles		Bldg 4.4.6.3-O	76.23	$ 3,811.50	45%	$ 514.55	$ 4,326.05	30%	60%	10%	$ 1,297.82	$ 2,595.63	$ 432.61	21.5 hrs		
254	Line painting to Floors	3.2.1.6	Bldg 4.4.6.3		$ -	45%	$ 554.75	$ 1,881.59	30%	60%	10%	$ 1,787.54	$ -	$ 94.05	50.0 hrs		
255	Cement and sand (1:3) screeds; 50mm thick		Bldg 4.4.6.3	22.69	$ 13,612.50	45%	$ 1,837.69	$ 15,450.19	30%	60%	10%	$ 4,635.06	$ 9,270.11	$ 1,545.02	76.7 hrs		
256	Two coats of epoxy anti-slip floor paint on screed		Bldg 4.4.6.3	47.19	$ 28,314.00	45%	$ 3,822.39	$ 32,136.39	30%	60%	10%	$ 9,640.92	$ 19,281.83	$ 3,213.64	159.5 hrs		
257	Cement and sand (1:3) screeds; 50mm thick		Bldg 4.4.6.3	22.69	$ 22,914.38	45%	$ 3,093.44	$ 26,007.82	30%	60%	10%	$ 7,802.34	$ 15,604.69	$ 2,600.78	129.1 hrs		
258	Two coats of epoxy anti-slip floor paint on screed		Bldg 4.4.6.3	47.19	$ 47,661.90	45%	$ 6,434.36	$ 54,096.26	30%	60%	10%	$ 16,228.88	$ 32,457.75	$ 5,409.63	268.6 hrs		
	Ceiling finishes				$ -	45%	$ -	$ -				$ -	$ -	$ -	-		
259	Paints to ceilings (Storage); two coats emulsion paint	3.3.1.1	Bldg 4.4.6.4	5.45	$ 5,499.45	45%	$ 742.43	$ 6,241.88	30%	60%	10%	$ 1,872.56	$ 3,745.13	$ 624.19	31.0 hrs		
260	Paints to ceilings; two coats emulsion paint	3.3.1.1	Bldg 4.4.6.4	9.08	$ 5,445.00	45%	$ 735.08	$ 6,180.08	30%	60%	10%	$ 1,854.02	$ 3,708.05	$ 618.01	30.7 hrs		
261	Acoustic ceilings to Offices on anti vibration mounting	3.3.3.1	Bldg 4.4.6.4-O	98.01	$ 24,502.50	45%	$ 3,307.84	$ 27,810.34	30%	60%	10%	$ 8,343.10	$ 16,686.20	$ 2,781.03	138.1 hrs		
					$ -	45%	$ -	$ -	30%	60%	10%	$ -	$ -	$ -	-		
	Sub-Total				**$ 288,364.59**		**$ 140,358.46**	**$ 735,259.72**				**$ 425,015.68**	**$ 197,322.99**	**$ 112,921.05**	**10,671.0 hrs**		
	ELEVATORS, LIFTS AND HOISTS																
262	Dock Levellers (Elec Operated)	5.10.7.1	Bldg 4.4.6.7	8,000.00	$ 16,000.00	45%	$ 2,160.00	$ 18,160.00	30%	60%	10%	$ 5,448.00	$ 10,896.00	$ 1,816.00	90.2 hrs		
263	Rubber Bumpers on Wall at Loading Bay	5.10.7.1	Bldg 4.4.6.7	400.00	$ 3,200.00	45%	$ 432.00	$ 3,632.00	30%	60%	10%	$ 1,089.60	$ 2,179.20	$ 363.20	18.0 hrs		
264	Temporary prefabricated Loading dock (use during construction)		Bldg 4.4.6.7	6,000.00	$ 6,000.00	45%	$ 810.00	$ 6,810.00	30%	60%	10%	$ 2,043.00	$ 4,086.00	$ 681.00	33.8 hrs		
					$ -	45%	$ -	$ -				$ -	$ -	$ -	-		
	Sub-Total				**$ 25,200.00**		**$ 3,402.00**	**$ 28,602.00**				**$ 8,580.60**	**$ 17,161.20**	**$ 2,860.20**	**142.0 hrs**		
	BUILDING SERVICES																
	Sanitary appliances				$ -	45%	$ -	$ -				$ -	$ -	$ -	-		
265	Washroom Accessories (complete Male/Fe/HC)	5.1.1.1	Bldg 4.4.6.14-O	52,000.00	$ 52,000.00	45%	$ 7,020.00	$ 59,020.00	30%	60%	10%	$ 17,706.00	$ 35,412.00	$ 5,902.00	266.4 hrs		
	Disposal equipment				$ -	45%	$ -	$ -				$ -	$ -	$ -	-		
266	Garbage/Recycling Equipment	5.3.3.1	Bldg 4.4.6.14-O	562.65	$ 562.65	45%	$ 75.96	$ 638.61	30%	60%	10%	$ 191.58	$ 383.16	$ 63.86	3.2 hrs		
	Water installations				$ -	45%	$ -	$ -				$ -	$ -	$ -	-		
267	Hot and cold water installations; complete installation		Bldg 4.2.1.4	44.47	$ 11,116.88	45%	$ 1,500.78	$ 12,617.65	30%	60%	10%	$ 3,785.30	$ 7,570.59	$ 1,261.77	56.9 hrs		
268	Stand alone Demineralized water tank on Metal stand (1000 gallons Cap)		Bldg 4.2.6.2	12,000.00	$ 12,000.00	45%	$ 1,620.00	$ 13,620.00	30%	60%	10%	$ 4,086.00	$ 8,172.00	$ 1,362.00	67.6 hrs		
	Water installations				$ -	45%	$ -	$ -				$ -	$ -	$ -	-		
269	Water Heater 100 litres		Bldg 4.2.6.2		$ -	45%	$ 203.40	$ 3,814.95	30%	60%	10%	$ 655.40	$ -	$ 3,159.55	16.7 hrs		
	Uninterruptible Power Supply				$ -	45%	$ -	$ -				$ -	$ -	$ -	-		
270	Static UPS including Control panel & Batteries for 500 KVA @ $495/KVA		Bldg 4.1.1.5	820.00	$ 410,000.00	45%	$ 55,350.00	$ 465,350.00	30%	60%	10%	$ 139,605.00	$ 279,210.00	$ 46,535.00	2,046.0 hrs		
271	Inverter Panels		Bldg 4.1.1.5	750.00	$ 1,500.00	45%	$ 202.50	$ 1,702.50	30%	60%	10%	$ 510.75	$ 1,021.50	$ 170.25	7.5 hrs		
272	Battery Racks		Bldg 4.1.1.5	2,400.00	$ 4,800.00	45%	$ 648.00	$ 5,448.00	30%	60%	10%	$ 1,634.40	$ 3,268.80	$ 544.80	24.0 hrs		
					$ -	45%	$ -	$ -				$ -	$ -	$ -	-		
	ELECTRICAL				$ -	45%	$ -	$ -				$ -	$ -	$ -	-		
273	Sub Station (prefabricated) @ $45,000		Bldg 4.1.1.1	45,000.00	$ 45,000.00	45%	$ 6,075.00	$ 51,075.00	30%	60%	10%	$ 15,322.50	$ 30,645.00	$ 5,107.50	253.6 hrs		
					$ -	45%	$ -	$ -				$ -	$ -	$ -	-		
274	Transformer - 1000 KVA		Bldg 4.1.1.1	29,700.00	$ 29,700.00	45%	$ 4,009.50	$ 33,709.50	30%	60%	10%	$ 10,112.85	$ 20,225.70	$ 3,370.95	148.2 hrs		
275	Transformer - 1500 KVA		Bldg 4.1.1.1	61,000.00	$ 61,000.00	45%	$ 8,235.00	$ 69,235.00	30%	60%	10%	$ 20,770.50	$ 41,541.00	$ 6,923.50	304.4 hrs		
276	Transformer - 2000 KVA		Bldg 4.1.1.1	73,000.00	$ 73,000.00	45%	$ 9,855.00	$ 82,855.00	30%	60%	10%	$ 24,856.50	$ 49,713.00	$ 8,285.50	364.3 hrs		
					$ -	45%	$ -	$ -				$ -	$ -	$ -	-		
277	Standby Generator (Diesel powered) 1000 KVA @ $350,000		Bldg 4.1.2.1	350,000.00	$ 350,000.00	45%	$ 47,250.00	$ 397,250.00	30%	60%	10%	$ 119,175.00	$ 238,350.00	$ 39,725.00	1,746.6 hrs		
					$ -	45%	$ -	$ -				$ -	$ -	$ -	-		
278	Ring Main Unit 11 kv including Electrical terminations @ $29,700		Bldg 4.1.1.1	29,700.00	$ 89,100.00	45%	$ 12,028.50	$ 101,128.50	30%	60%	10%	$ 30,338.55	$ 60,677.10	$ 10,112.85	444.6 hrs		
					$ -	45%	$ -	$ -				$ -	$ -	$ -	-		
279	Lighting and power installation - Offices 250m2 -		Bldg 4.1.5.3-O	190.58	$ 47,643.75	45%	$ 6,431.91	$ 54,075.66	30%	60%	10%	$ 16,222.70	$ 32,445.39	$ 5,407.57	237.8 hrs		
280	Electrical Installation - Storage Area - 1010 m2 - Lighting Installation		Bldg 4.1.5.2	79.86	$ 80,658.60	45%	$ 10,888.91	$ 91,547.51	30%	60%	10%	$ 27,464.25	$ 54,928.51	$ 9,154.75	402.5 hrs		
281	Electrical Installation - Facility/Clean up/Drum Handling-630 m2		Bldg 4.1.5.2	79.86	$ 50,311.80	45%	$ 6,792.09	$ 57,103.89	30%	60%	10%	$ 17,131.17	$ 34,262.34	$ 5,710.39	251.1 hrs		
282	Electrical Installation -HVAC /Electrical Rm - 600 m2 - Lighting Installation		Bldg 4.1.5.2	79.86	$ 47,916.00	45%	$ 6,468.66	$ 54,384.66	30%	60%	10%	$ 16,315.40	$ 32,630.80	$ 5,438.47	239.1 hrs		
283	Lightening Arrestor (c/w earthing wire, copper rods)		Bldg 4.1.5.2	20,000.00	$ 20,000.00	45%	$ 2,700.00	$ 22,700.00	30%	60%	10%	$ 6,810.00	$ 13,620.00	$ 2,270.00	99.8 hrs		
					$ -	45%	$ -	$ -				$ -	$ -	$ -	-		
	Space Heating & Air Treatment				$ -	45%	$ -	$ -				$ -	$ -	$ -	-		
284	Heating - Offices - 250 m2		Bldg 4.2.1.10-O	47.45	$ 11,863.50	45%	$ 1,601.57	$ 13,465.07	30%	60%	10%	$ 4,039.52	$ 8,079.04	$ 1,346.51	58.4 hrs		
285	Cooling - Offices - 250 m2		Bldg 4.2.1.10-O	56.22	$ 14,053.88	45%	$ 1,897.27	$ 15,951.15	30%	60%	10%	$ 4,785.34	$ 9,570.69	$ 1,595.11	69.2 hrs		
286	Ductwork - Offices - 250 m2		Bldg 4.2.1.10-O	140.42	$ 35,103.75	45%	$ 4,739.01	$ 39,842.76	30%	60%	10%	$ 11,952.83	$ 23,905.65	$ 3,984.28	176.8 hrs		
					$ -	45%	$ -	$ -				$ -	$ -	$ -	-		
287	Heating - Storage Area - 1010 m2		PROC 4.2.1.7	39.01	$ 39,396.06	45%	$ 5,318.47	$ 44,714.53	30%	60%	10%	$ 13,414.36	$ 26,828.72	$ 4,471.45	194.1 hrs		
288	BMS System Installation		PROC 4.2.1.7	9.83	$ 9,932.34	45%	$ 1,340.87	$ 11,273.21	30%	60%	10%	$ 3,381.96	$ 6,763.92	$ 1,127.32	48.9 hrs		
					$ -	45%	$ -	$ -				$ -	$ -	$ -	-		
289	Heating - Facility/Clean up/Drum Handling - 630 m2		PROC 4.2.1.7	39.01	$ 24,573.78	45%	$ 3,317.46	$ 27,891.24	30%	60%	10%	$ 8,367.37	$ 16,734.74	$ 2,789.12	121.1 hrs		
290	BMS System Installation		PROC 4.2.1.7	9.83	$ 6,195.42	45%	$ 836.38	$ 7,031.80	30%	60%	10%	$ 2,109.54	$ 4,219.08	$ 703.18	30.5 hrs		
					$ -	45%	$ -	$ -				$ -	$ -	$ -	-		
291	Heating - HVAC/Elec Rm - 600 m2		PROC 4.2.1.7	39.01	$ 23,403.60	45%	$ 3,159.49	$ 26,563.09	30%	60%	10%	$ 7,968.93	$ 15,937.85	$ 2,656.31	115.3 hrs		
292	BMS System Installation		PROC 4.2.1.7	9.83	$ 5,900.40	45%	$ 796.55	$ 6,696.95	30%	60%	10%	$ 2,009.09	$ 4,018.17	$ 669.70	29.1 hrs		
					$ -	45%	$ -	$ -				$ -	$ -	$ -	-		
	SPRINKLER INSTALLATION				$ -	45%	$ -	$ -				$ -	$ -	$ -	-		
293	Offices - 250 m2		Bldg 4.2.10.3-O	36.96	$ 9,240.00	45%	$ 1,247.40	$ 10,487.40	30%	60%	10%	$ 3,146.22	$ 6,292.44	$ 1,048.74	45.5 hrs		
294	Storage Area - 1010 m2		Bldg 4.2.10.1	36.96	$ 37,329.60	45%	$ 5,039.50	$ 42,369.10	30%	60%	10%	$ 12,710.73	$ 25,421.46	$ 4,236.91	183.9 hrs		
295	Facility/Clean up/Drum Handling - 630 m2		Bldg 4.2.10.1	36.96	$ 23,284.80	45%	$ 3,143.45	$ 26,428.25	30%	60%	10%	$ 7,928.47	$ 15,856.95	$ 2,642.82	114.7 hrs		

DNGS Heavy Water Management Building - Construction Cost Estimate

Ref	Item	NRM Ref	PBS	All-in Rate [$/unit]	All-in Total [$]	Indirect Costs % of Labour Total [%]	Indirect Total [$]	Total Cost [$]	All-in Rate Split Lab [%]	Mat [%]	Equip [%]	Labour [$]	Materials [$]	Construction Equipment [$]	Total DFL Hours [hours]	Estimate Class	Assumptions
296	HVAC/Elec Rm - 600 m2		Bldg 4.2.10.1	36.96	$ 22,176.00	45%	$ 2,993.76	$ 25,169.76	30%	60%	10%	$ 7,550.93	$ 15,101.86	$ 2,516.98	109.3 hrs		
					$ -	45%	$ -	$ -				$ -	$ -	$ -	-		
	COMMUNICATION INSTALLATION - Fire/Voice Alarm				$ -	45%	$ -	$ -				$ -	$ -	$ -	-		
297	Offices - 250 m2		Bldg 4.1.3.8-O	21.38	$ 5,346.00	45%	$ 721.71	$ 6,067.71	30%	60%	10%	$ 1,820.31	$ 3,640.63	$ 606.77	26.7 hrs		
298	Storage Area - 1010 m2		Bldg 4.1.3.4	21.38	$ 21,597.84	45%	$ 2,915.71	$ 24,513.55	30%	60%	10%	$ 7,354.06	$ 14,708.13	$ 2,451.35	107.8 hrs		
299	Facility/Clean up/Drum Handling - 630 m2		Bldg 4.1.3.4	21.38	$ 13,471.92	45%	$ 1,818.71	$ 15,290.63	30%	60%	10%	$ 4,587.19	$ 9,174.38	$ 1,529.06	67.2 hrs		
300	HVAC/Elec Rm - 600 m2		Bldg 4.1.3.4	21.38	$ 12,830.40	45%	$ 1,732.10	$ 14,562.50	30%	60%	10%	$ 4,368.75	$ 8,737.50	$ 1,456.25	64.0 hrs		
					$ -	45%	$ -	$ -				$ -	$ -	$ -	-		
	Natural Gas Installation				$ -	45%	$ -	$ -				$ -	$ -	$ -	-		
	Not Required				$ -	45%	$ -	$ -				$ -	$ -	$ -	-		
	Heating, Ventilation and Air Conditioning				$ -	45%	$ -	$ -				$ -	$ -	$ -	-		
301	Building Management system tie ins for Office building Heating & Cooling system	5.6.1.1	Bldg 4.2.2.7-O	32.88	$ 8,221.13	45%	$ 1,109.85	$ 9,330.98	30%	60%	10%	$ 2,799.29	$ 5,598.59	$ 933.10	40.5 hrs		
302	Main Steam line tie ins from Main Source	5.6.1.1	Bldg 4.2.2.7-O	25,000.00	$ 25,000.00	45%	$ 3,375.00	$ 28,375.00	30%	60%	10%	$ 8,512.50	$ 17,025.00	$ 2,837.50	123.2 hrs		
303	Local ventilation to WC	5.6.1.1	Bldg 4.2.2.7-O	435.60	$ 1,742.40	45%	$ 235.22	$ 1,977.62	30%	60%	10%	$ 593.29	$ 1,186.57	$ 197.76	8.6 hrs		
304	Ventilation system to toilet areas	5.6.1.1	Bldg 4.2.2.7-O	36.30	$ 1,815.00	45%	$ 245.03	$ 2,060.03	30%	60%	10%	$ 618.01	$ 1,236.02	$ 206.00	8.9 hrs		
305	Electrical Space Heaters at Storage Area - 1010 M2	5.6.2.1	Bldg 4.2.6.2	1,500.00	$ 6,000.00	45%	$ 810.00	$ 6,810.00	30%	60%	10%	$ 2,043.00	$ 4,086.00	$ 681.00	29.9 hrs		
306	Clean Breathing Air System Plant	5.7.1.1	PROC 4.2.1.7	45,900.00	$ 91,800.00	45%	$ 12,393.00	$ 104,193.00	30%	60%	10%	$ 31,257.90	$ 62,515.80	$ 10,419.30	452.3 hrs		
307	Service Air System Plant	5.7.1.1	PROC 4.2.1.7	23,000.00	$ 23,000.00	45%	$ 3,105.00	$ 26,105.00	30%	60%	10%	$ 7,831.50	$ 15,663.00	$ 2,610.50	113.3 hrs		
308	Instrument System Plant (with dessicant air dryer)	5.7.1.1	PROC 4.2.1.7	23,000.00	$ 23,000.00	45%	$ 3,105.00	$ 26,105.00	30%	60%	10%	$ 7,831.50	$ 15,663.00	$ 2,610.50	113.3 hrs		
307	Exhaust Fan with Mech operated Louvers c/w control system	5.7.3.1	Bldg 4.4.6.5	28,000.00	$ 168,000.00	45%	$ 22,680.00	$ 190,680.00	30%	60%	10%	$ 57,204.00	$ 114,408.00	$ 19,068.00	838.4 hrs		
309	Pre fab Mech Operated Metal Louvres (prefinished)2x3M	5.7.3.1	Bldg 4.4.6.5	1,200.00	$ 7,200.00	45%	$ 972.00	$ 8,172.00	30%	60%	10%	$ 2,451.60	$ 4,903.20	$ 817.20	35.5 hrs		
	Electrical installations				$ -	45%	$ -	$ -				$ -	$ -	$ -	-		
310	Electrical Main Junction & Distribution Box	5.8.1.1	Bldg 4.1.1.2		$ -	45%	$ 182.69	$ 17,475.08	30%	60%	10%	$ 588.68	$ -	$ 16,886.40	14.6 hrs		
311	Internal LV wiring	5.8.1.1	Bldg 4.1.1.2		$ -	45%	$ 5,115.43	$ 23,977.84	30%	60%	10%	$ 16,483.05	$ -	$ 7,494.80	408.2 hrs		
312	Lighting & Fixtures (Office)	5.8.3.1	Bldg 4.1.5.2-O	300.00	$ 3,600.00	45%	$ 486.00	$ 4,086.00	30%	60%	10%	$ 1,225.80	$ 2,451.60	$ 408.60	18.0 hrs		
313	Lighting & Fixtures (Storage)	5.8.3.1	Bldg 4.1.5.2	300.00	$ 6,000.00	45%	$ 810.00	$ 6,810.00	30%	60%	10%	$ 2,043.00	$ 4,086.00	$ 681.00	29.9 hrs		
314	Lighting & Fixtures (HVAC room)	5.8.3.1	Bldg 4.1.5.2	300.00	$ 2,400.00	45%	$ 324.00	$ 2,724.00	30%	60%	10%	$ 817.20	$ 1,634.40	$ 272.40	12.0 hrs		
315	Lighting & Fixtures (External)	5.8.3.1	Bldg 4.1.5.2	300.00	$ 5,400.00	45%	$ 729.00	$ 6,129.00	30%	60%	10%	$ 1,838.70	$ 3,677.40	$ 612.90	26.9 hrs		
316	Special Lighting systems	5.8.4.1	Bldg 4.1.5.2	500.00	$ 2,000.00	45%	$ 270.00	$ 2,270.00	30%	60%	10%	$ 681.00	$ 1,362.00	$ 227.00	10.0 hrs		
317	Way finding Signs (Illuminated)	5.8.4.1	Bldg 4.1.5.2	350.00	$ 5,600.00	45%	$ 756.00	$ 6,356.00	30%	60%	10%	$ 1,906.80	$ 3,813.60	$ 635.60	27.9 hrs		
					$ -	45%	$ -	$ -				$ -	$ -	$ -	-		
	Fire and lightening protection				$ -	45%	$ -	$ -				$ -	$ -	$ -	-		
318	Fire alarms/appliances		Bldg 4.1.6.1	14.00	$ 35,000.00	45%	$ 4,725.00	$ 39,725.00	30%	60%	10%	$ 11,917.50	$ 23,835.00	$ 3,972.50	174.7 hrs		
319	Lightening protection system	5.11.2.1	Bldg 4.1.6.1	2.00	$ 5,000.00	45%	$ 675.00	$ 5,675.00	30%	60%	10%	$ 1,702.50	$ 3,405.00	$ 567.50	25.0 hrs		
320	Fire and Smoke Detectors		Bldg 4.1.6.1	250.00	$ 4,000.00	45%	$ 540.00	$ 4,540.00	30%	60%	10%	$ 1,362.00	$ 2,724.00	$ 454.00	20.0 hrs		
	Communication, security and control systems				$ -	45%	$ -	$ -				$ -	$ -	$ -	-		
321	LAN	5.12.1.2	Bldg 4.1.3.5-O	1,200.00	$ 14,400.00	45%	$ 1,944.00	$ 16,344.00	30%	60%	10%	$ 4,903.20	$ 9,806.40	$ 1,634.40	71.9 hrs		
322	Internal Communication system; Telecommunication System	5.12.1.1	Bldg 4.1.3.1	3.85	$ 9,586.50	45%	$ 1,294.18	$ 10,880.68	30%	60%	10%	$ 3,264.20	$ 6,528.41	$ 1,088.07	47.8 hrs		
323	Public address system	5.12.1.1	Bldg 4.1.3.1	3.85	$ 9,586.50	45%	$ 1,294.18	$ 10,880.68	30%	60%	10%	$ 3,264.20	$ 6,528.41	$ 1,088.07	47.8 hrs		
324	Central security control devices; Security Systems; Security Lights and lighting system,	5.12.1.1	Bldg 4.1.3.1	3.85	$ 9,586.50	45%	$ 1,294.18	$ 10,880.68	30%	60%	10%	$ 3,264.20	$ 6,528.41	$ 1,088.07	47.8 hrs		
325	TV monitors	5.12.1.14	Bldg 4.1.3.6-O	1,200.00	$ 9,600.00	45%	$ 1,296.00	$ 10,896.00	30%	60%	10%	$ 3,268.80	$ 6,537.60	$ 1,089.60	47.9 hrs		
326	Surveillance equipment; detectors and alarms	5.12.1.1	Bldg 4.1.3.2	7.70	$ 19,173.00	45%	$ 2,588.36	$ 21,761.36	30%	60%	10%	$ 6,528.41	$ 13,056.81	$ 2,176.14	95.7 hrs		
	Builders work in connection with building services				$ -	45%	$ -	$ -				$ -	$ -	$ -	-		
327	Cutting and Patching	5.14.1.1	STIE 4.2.11.1	300.00	$ 30,000.00	45%	$ 4,050.00	$ 34,050.00	30%	60%	10%	$ 10,215.00	$ 20,430.00	$ 3,405.00	169.0 hrs		
328	Fire & smoke stopping	5.14.1.1	Bldg 4.1.6.1	10.00	$ 24,900.00	45%	$ 3,361.50	$ 28,261.50	30%	60%	10%	$ 8,478.45	$ 16,956.90	$ 2,826.15	140.3 hrs		
329	Ducts/Pipe sleeves/Openings	5.14.1.1	STIE 4.2.11.1	300.00	$ 45,000.00	45%	$ 6,075.00	$ 51,075.00	30%	60%	10%	$ 15,322.50	$ 30,645.00	$ 5,107.50	253.6 hrs		
330	Housekeeping pads; 150mm thick	5.14.1.1	Bldg 4.4.1.1	400.00	$ 108,000.00	45%	$ 14,580.00	$ 122,580.00	30%	60%	10%	$ 36,774.00	$ 73,548.00	$ 12,258.00	591.9 hrs		
331	Housekeeping pads; 100mm thick	5.14.1.1	Bldg 4.4.1.1	300.00	$ 11,250.00	45%	$ 1,518.75	$ 12,768.75	30%	60%	10%	$ 3,830.63	$ 7,661.25	$ 1,276.88	61.7 hrs		
	Ducts for incoming services				$ -	45%	$ -	$ -				$ -	$ -	$ -	-		
332	Excavation for Duct bank for services (incoming)		SPRP 4.4.7.1		$ -	45%	$ 876.66	$ 4,025.41	60%	30%	10%	$ 2,824.79	$ 1,200.62	$ -	81.5 hrs		
333	Concrete in blinding for Duct bank for services (incoming)		Bldg 4.4.1.1		$ -	45%	$ 22.82	$ 543.22	60%	30%	10%	$ 73.52	$ 9.80	$ 459.90	2.0 hrs		
334	Concrete in base slab Duct bank for services (incoming)		Bldg 4.4.1.1		$ -	45%	$ 34.65	$ 809.71	60%	30%	10%	$ 111.65	$ 77.18	$ 620.87	3.0 hrs		
335	Concrete in walls Duct bank for services (incoming)		Bldg 4.4.1.1		$ -	45%	$ 98.82	$ 1,987.28	60%	30%	10%	$ 318.42	$ 220.17	$ 1,448.70	8.7 hrs		
336	Concrete in roof slab Duct bank for services (incoming)		Bldg 4.4.1.1		$ -	45%	$ 34.65	$ 809.71	60%	30%	10%	$ 111.65	$ 77.18	$ 620.87	3.0 hrs		
337	Formwork in walls Duct bank for services (incoming)		Bldg 4.4.1.1		$ -	45%	$ 6,108.83	$ 20,676.73	60%	30%	10%	$ 19,684.00	$ -	$ 992.72	535.3 hrs		
338	Formwork for Duct bank for services (incoming)		Bldg 4.4.1.1		$ -	45%	$ 7,144.08	$ 23,713.30	60%	30%	10%	$ 23,019.81	$ -	$ 693.50	626.0 hrs		
339	Formwork for roof slab Duct bank for services (incoming)		Bldg 4.4.1.1		$ -	45%	$ 3,572.04	$ 11,856.65	60%	30%	10%	$ 11,509.90	$ -	$ 346.75	313.0 hrs		
340	Reinforcement for Duct bank for services (incoming)		Bldg 4.4.1.2		$ -	45%	$ 1,140.77	$ 4,507.43	60%	30%	10%	$ 3,675.82	$ -	$ 831.62	100.0 hrs		
	Tie-ins to existing services				$ -	45%	$ -	$ -				$ -	$ -	$ -	-		
	Testing and commissioning building services				$ -	45%	$ -	$ -				$ -	$ -	$ -	-		
341	Testing Telecommunication System;		STIE 4.1.7.4	70.50	$ 1,128.00	45%	$ 355.32	$ 1,483.32	70%	15%	15%	$ 1,038.32	$ 222.50	$ 222.50	15.2 hrs		
342	Testing Public Address System;		STIE 4.1.7.4	70.50	$ 1,128.00	45%	$ 355.32	$ 1,483.32	70%	15%	15%	$ 1,038.32	$ 222.50	$ 222.50	15.2 hrs		
343	Testing Fire Detection and Alarm Systems		STIE 4.3.7.2	70.50	$ 1,128.00	45%	$ 355.32	$ 1,483.32	70%	15%	15%	$ 1,038.32	$ 222.50	$ 222.50	15.2 hrs		
344	Testing Security Systems; Surveillance equipment; detectors		STIE 4.3.7.2	70.50	$ 1,128.00	45%	$ 355.32	$ 1,483.32	70%	15%	15%	$ 1,038.32	$ 222.50	$ 222.50	15.2 hrs		
345	Testing Security Systems; Surveillance equipment; alarms		STIE 4.3.7.2	70.50	$ 1,128.00	45%	$ 355.32	$ 1,483.32	70%	15%	15%	$ 1,038.32	$ 222.50	$ 222.50	15.2 hrs		
346	Testing Security Systems; Security Lights and lighting system, in y Nr		STIE 4.1.7.4	70.50	$ 1,128.00	45%	$ 355.32	$ 1,483.32	70%	15%	15%	$ 1,038.32	$ 222.50	$ 222.50	15.2 hrs		
347	Commissioning Telecommunication System;		STIE 4.1.7.4	70.50	$ 2,256.00	45%	$ 710.64	$ 2,966.64	70%	15%	15%	$ 2,076.65	$ 445.00	$ 445.00	30.4 hrs		
348	Commissioning Public Address System;		STIE 4.1.7.4	70.50	$ 2,256.00	45%	$ 710.64	$ 2,966.64	70%	15%	15%	$ 2,076.65	$ 445.00	$ 445.00	30.4 hrs		
349	Commissioning Fire Detection and Alarm Systems		STIE 4.3.7.2	70.50	$ 2,256.00	45%	$ 710.64	$ 2,966.64	70%	15%	15%	$ 2,076.65	$ 445.00	$ 445.00	30.4 hrs		
350	Commissioning Security Systems; Surveillance equipment; detectors		STIE 4.3.7.2	70.50	$ 2,256.00	45%	$ 710.64	$ 2,966.64	70%	15%	15%	$ 2,076.65	$ 445.00	$ 445.00	30.4 hrs		
351	Commissioning Security Systems; Surveillance equipment; alarms		STIE 4.3.7.2	70.50	$ 2,256.00	45%	$ 710.64	$ 2,966.64	70%	15%	15%	$ 2,076.65	$ 445.00	$ 445.00	30.4 hrs		

DNGS Heavy Water Management Building - Construction Cost Estimate

Ref	Item	NRM Ref	PBS	All-in Rate [$/unit]	All-in Total [$]	Indirect Costs % of Labour Total [%]	Indirect Total [$]	Total Cost [$]	All-in Rate Split Lab [%]	Mat [%]	Equip [%]	Labour [$]	Materials [$]	Construction Equipment [$]	Total DFL Hours [hours]	Estimate Class	Assumptions
352	Commissioning Security Systems; Security Lights and lighting system, in y Nr		STIE 4.1.7.4	70.50	$ 2,256.00	45%	$ 710.64	$ 2,966.64	70%	15%	15%	$ 2,076.65	$ 445.00	$ 445.00	30.4 hrs		
353	Specialist Training and Information sharing	5.15.1.1	Bldg 4.4.8.1.3		$ -	45%	$ 4,292.54	$ 13,831.51	70%	15%	15%	$ 13,831.51	$ -	$ -	342.5 hrs		
					$ -	45%	$ -	$ -				$ -	$ -	$ -	-		
	Sub-Total				**$ 2,438,173.99**		**$ 361,635.58**	**$ 2,899,011.02**				**$ 934,862.76**	**$ 1,652,159.38**	**$ 311,988.88**	**14,937.9 hrs**		
	MISCELLANEOUS METALWORK																
354	Railings at Roof top; mild steel balustrade and steel handrail; 1100mm high		Bldg 4.4.3.3	490.05	$ 71,547.30	45%	$ 9,658.89	$ 81,206.19	30%	60%	10%	$ 24,361.86	$ 48,723.71	$ 8,120.62	362.3 hrs		
355	Miscellaneous metals (Offices)		Bldg 4.4.3.5-O	50,000.00	$ 50,000.00	45%	$ 6,750.00	$ 56,750.00	30%	60%	10%	$ 17,025.00	$ 34,050.00	$ 5,675.00	253.2 hrs		
356	Miscellaneous Mmetals (Building)		Bldg 4.4.3.1	200,000.00	$ 200,000.00	45%	$ 27,000.00	$ 227,000.00	30%	60%	10%	$ 68,100.00	$ 136,200.00	$ 22,700.00	1,012.7 hrs		
					$ -	45%	$ -	$ -				$ -	$ -	$ -	-		
	Sub-Total				**$ 321,547.30**		**$ 43,408.89**	**$ 364,956.19**				**$ 109,486.86**	**$ 218,973.71**	**$ 36,495.62**	**1,628.2 hrs**		
	INTERNAL FITTINGS, FURNISHINGS AND EQUIPMENT																
	General fixtures and fittings				$ -	45%	$ -	$ -				$ -	$ -	$ -	-		
357	Furniture to Offices (18 personnel)		Bldg 4.4.6.13-O	3,500.00	$ 63,000.00	45%	$ 8,505.00	$ 71,505.00	30%	60%	10%	$ 21,451.50	$ 42,903.00	$ 7,150.50	355.0 hrs		
358	Furniture to Conference room and Admin area		Bldg 4.4.6.13-O	75,000.00	$ 75,000.00	45%	$ 10,125.00	$ 85,125.00	30%	60%	10%	$ 25,537.50	$ 51,075.00	$ 8,512.50	422.6 hrs		
359	Window Blinds; 2.0m wide		Bldg 4.4.6.13-O		$ -	45%	$ 6,703.28	$ 23,410.81	30%	60%	10%	$ 21,599.44	$ -	$ 1,811.37	382.1 hrs		
360	Eye wash Station		Bldg 4.4.6.14-O	3,500.00	$ 7,000.00	45%	$ 945.00	$ 7,945.00	30%	60%	10%	$ 2,383.50	$ 4,767.00	$ 794.50	39.4 hrs		
361	Emergency Shower		Bldg 4.4.6.14-O	7,500.00	$ 15,000.00	45%	$ 2,025.00	$ 17,025.00	30%	60%	10%	$ 5,107.50	$ 10,215.00	$ 1,702.50	84.5 hrs		
362	Laboratory Shelving		Bldg 4.4.6.14-O	3,000.00	$ 3,000.00	45%	$ 405.00	$ 3,405.00	30%	60%	10%	$ 1,021.50	$ 2,043.00	$ 340.50	16.9 hrs		
363	Change room station		Bldg 4.4.6.14-O	3,500.00	$ 3,500.00	45%	$ 472.50	$ 3,972.50	30%	60%	10%	$ 1,191.75	$ 2,383.50	$ 397.25	19.7 hrs		
364	Fume hoods - cover at all tanks		Bldg 4.2.2.5	12,000.00	$ 300,000.00	45%	$ 40,500.00	$ 340,500.00	30%	60%	10%	$ 102,150.00	$ 204,300.00	$ 34,050.00	1,690.4 hrs		
365	Fume hoods @ Drum Cleaning Area		Bldg 4.2.2.5	15,000.00	$ 30,000.00	45%	$ 4,050.00	$ 34,050.00	30%	60%	10%	$ 10,215.00	$ 20,430.00	$ 3,405.00	169.0 hrs		
365	Radiation monitors (Storage area)		Bldg 4.1.9.1		$ -	45%	$ -	Excluded	30%	60%	10%						
366	SAM - Small Article Monitor		Bldg 4.1.9.1	81,000.00	$ 81,000.00	45%	$ 10,935.00	$ 91,935.00	30%	60%	10%	$ 27,580.50	$ 55,161.00	$ 9,193.50	404.2 hrs		
367	Motion detector		Bldg 4.1.9.1	988.00	$ 7,904.00	45%	$ 1,067.04	$ 8,971.04	30%	60%	10%	$ 2,691.31	$ 5,382.62	$ 897.10	39.4 hrs		
					$ -	45%	$ -	$ -				$ -	$ -	$ -	-		
	Sub-Total				**$ 585,404.00**		**$ 85,732.82**	**$ 687,844.35**				**$ 220,929.50**	**$ 398,660.12**	**$ 68,254.72**	**3,623.3 hrs**		
	PROCESS EQUIPMENT																
	PHT D2O Supply Tanks (8 ea)				$ -	45%	$ -	$ -				$ -	$ -	$ -	-		
368	Tanks 100 Mg 38110 - SS 304 Class 6		PROC 4.2.5.4	572,000.00	$ 4,576,000.00	45%	$ -	$ 4,576,000.00	0%	100%	0%	$ -	$ 4,576,000.00	$ -	-		From previous estimate
369	Tanks 100 Mg 38110 - Installation		PROC 4.2.5.4	13,500.00	$ 108,000.00	45%	$ -	$ 108,000.00	0%	85%	15%	$ -	$ 91,800.00	$ 16,200.00	-		From previous estimate
370	Tanks 100 Mg 38110 - Commissioning		PROC 4.2.5.4	4,050.00	$ 32,400.00	45%	$ 10,206.00	$ 42,606.00	70%	15%	15%	$ 29,824.20	$ 6,390.90	$ 6,390.90	443.5 hrs		From previous estimate
371	Pressure sensors		PROC 4.2.1.3		$ -	45%	$ 2,537.83	$ 12,313.45				$ 8,177.45	$ -	$ 4,136.00	199.9 hrs		
372	Level sensors		PROC 4.2.1.3		$ -	45%	$ 3,383.77	$ 47,207.27				$ 10,903.27	$ -	$ 36,304.00	266.6 hrs		
373	Pressure Gauges		PROC 4.2.1.3		$ -	45%	$ 3,383.77	$ 34,791.27				$ 10,903.27	$ -	$ 23,888.00	266.6 hrs		
374	Piping - S Steel - Inlets - 3 " for 100 Mg Tanks		PROC 4.2.1.1		$ -	45%	$ 18,240.65	$ 90,065.42				$ 58,775.42	$ -	$ 31,290.00	1,436.9 hrs		
375	Piping - S Steel - Outlet - 3" for 100 Mg Tanks		PROC 4.2.1.1		$ -	45%	$ 18,240.65	$ 90,065.42				$ 58,775.42	$ -	$ 31,290.00	1,436.9 hrs		
376	Switches - 2 level		PROC 4.2.1.3		$ -	45%	$ 2,923.10	$ 25,594.88				$ 9,418.88	$ -	$ 16,176.00	233.2 hrs		
377	Transmitters - 2 ea		PROC 4.2.1.3		$ -	45%	$ 3,340.69	$ 19,628.44				$ 10,764.44	$ -	$ 8,864.00	266.6 hrs		
378	Beetle - Leak Detection - 1 ea		PROC 4.2.1.3		$ -	45%	$ 1,670.34	$ 11,446.22				$ 5,382.22	$ -	$ 6,064.00	133.3 hrs		
379	Isolation Valve		PROC 4.2.1.2		$ -	45%	$ 164.96	$ 21,147.53				$ 531.53	$ -	$ 20,616.00	13.0 hrs		
380	Data Cables to Control room		Bldg 4.1.3.1	12.10	$ 8,712.00	45%	$ 784.08	$ 9,496.08	20%	60%	20%	$ 1,899.22	$ 5,697.65	$ 1,899.22	27.8 hrs		
381	Item-6- Cover gas Vent Control Valve pnuematic control Valve and Accessories		PROC 4.2.1.2		$ -	45%	$ 20.62	$ 856.44				$ 66.44	$ -	$ 790.00	1.6 hrs		
382	Item - 8 - Cover Gas Relief Valve		PROC 4.2.1.2		$ -	45%	$ 20.62	$ 686.44				$ 66.44	$ -	$ 620.00	1.6 hrs		
383	Item - 9 - Main Outlet Header Isolation Valve		PROC 4.2.1.2		$ -	45%	$ 20.62	$ 646.44				$ 66.44	$ -	$ 580.00	1.6 hrs		
384	Item - 11 & 12 - Outlet Isolation Valves		PROC 4.2.1.2		$ -	45%	$ 41.24	$ 1,292.88				$ 132.88	$ -	$ 1,160.00	3.2 hrs		
385	Item - 15 - Main Inlet Header Isolation Valve		PROC 4.2.1.2		$ -	45%	$ 20.62	$ 646.44				$ 66.44	$ -	$ 580.00	1.6 hrs		
386	Item 24 & 25 - Inlet Isolation Valve		PROC 4.2.1.2		$ -	45%	$ 41.24	$ 1,292.88				$ 132.88	$ -	$ 1,160.00	3.2 hrs		
387	Item - 26 - Cover Gas Supply Isolation Valve		PROC 4.2.1.2		$ -	45%	$ 20.62	$ 646.44				$ 66.44	$ -	$ 580.00	1.6 hrs		
388	Item - 28 - Supply Header Isolation Valve		PROC 4.2.1.2		$ -	45%	$ 20.62	$ 646.44				$ 66.44	$ -	$ 580.00	1.6 hrs		
389	Item - 29 - Vacuum Relief Valve		PROC 4.2.1.2		$ -	45%	$ 237.92	$ 2,037.64				$ 766.64	$ -	$ 1,271.00	18.7 hrs		
390	Item - 32 - Pressure Transmitter		PROC 4.2.1.3		$ -	45%	$ 208.79	$ 1,189.78				$ 672.78	$ -	$ 517.00	16.7 hrs		
391	Item 33 & 34 - Level Transmitter		PROC 4.2.1.3		$ -	45%	$ 365.39	$ 5,715.36				$ 1,177.36	$ -	$ 4,538.00	29.2 hrs		
392	Item-4-Storage Tank Cover Gas Chilled Condenser - Inlet 2", Outlet 2"		PROC 4.2.5.4		$ -	45%	$ 317.23	$ 1,022.18				$ 1,022.18	$ -	$ -	25.0 hrs		
393	Main Contractor's mark-up for storage, freight, transportation and profit. Say, 14% of material cost.		PROC 4.2.5.4	655,184.40	$ 655,184.40	45%	$ 117,933.19	$ 773,117.59	40%	0%	60%	$ 309,247.04	$ -	$ 463,870.55	4,474.5 hrs		
	Moderator D2O Supply Tanks(7 ea)				$ -	45%	$ -	$ -				$ -	$ -	$ -	-		
394	Tanks 100 Mg 38110; SS 304 Class 3		PROC 4.2.5.4	698,160.00	$ 4,887,120.00	45%	$ -	$ 4,887,120.00	0%	100%	0%	$ -	$ 4,887,120.00	$ -	-		From previous estimate
395	Tanks 100 Mg 38110 - Installation		PROC 4.2.5.4	13,500.00	$ 94,500.00	45%	$ -	$ 94,500.00	0%	85%	15%	$ -	$ 80,325.00	$ 14,175.00	-		From previous estimate
396	Tanks 100 Mg 38110 - Commissioning		PROC 4.2.5.4	4,050.00	$ 32,400.00	45%	$ 10,206.00	$ 42,606.00	70%	15%	15%	$ 29,824.20	$ 6,390.90	$ 6,390.90	443.5 hrs		From previous estimate
397	Valves		PROC 4.2.1.2		$ -	45%	$ 288.68	$ 930.18				$ 930.18	$ -	$ -	22.7 hrs		
398	Pressure sensors		PROC 4.2.1.3		$ -	45%	$ 2,220.60	$ 10,774.27				$ 7,155.27	$ -	$ 3,619.00	174.9 hrs		
399	Level sensors		PROC 4.2.1.3		$ -	45%	$ 2,960.80	$ 41,306.36				$ 9,540.36	$ -	$ 31,766.00	233.2 hrs		
400	Pressure Gauges		PROC 4.2.1.3		$ -	45%	$ 2,960.80	$ 30,442.36				$ 9,540.36	$ -	$ 20,902.00	233.2 hrs		
401	Piping - S Steel - Inlets - 3 " for 100 Mg Tanks		PROC 4.2.1.1		$ -	45%	$ 222,060.07	$ 742,905.64				$ 715,526.89	$ -	$ 27,378.75	17,493.0 hrs		
402	Piping - S Steel - Outlet - 3" for 100 Mg Tanks		PROC 4.2.1.1		$ -	45%	$ 166,545.05	$ 564,023.92				$ 536,645.17	$ -	$ 27,378.75	13,119.8 hrs		
403	Switches - 2 level		PROC 4.2.1.3		$ -	45%	$ 2,557.71	$ 22,395.52				$ 8,241.52	$ -	$ 14,154.00	204.1 hrs		
404	Transmitters - 2 ea		PROC 4.2.1.3		$ -	45%	$ 2,923.10	$ 17,174.88				$ 9,418.88	$ -	$ 7,756.00	233.2 hrs		
405	Beetle - Leak Detection - 1 ea		PROC 4.2.1.3		$ -	45%	$ 1,461.55	$ 10,015.44				$ 4,709.44	$ -	$ 5,306.00	116.6 hrs		
406	Isolation Valve		PROC 4.2.1.2		$ -	45%	$ 144.34	$ 18,504.09				$ 465.09	$ -	$ 18,039.00	11.4 hrs		
407	Data Cables to Control room		Bldg 4.1.3.1		$ -	45%	$ 17,577.94	$ 64,263.04				$ 56,640.04	$ -	$ 7,623.00	1,402.6 hrs		

DNGS Heavy Water Management Building - Construction Cost Estimate

Ref	Item	NRM Ref	PBS	All-in Rate [$/unit]	All-in Total [$]	Indirect Costs % of Labour Total [%]	Indirect Total [$]	Total Cost [$]	All-in Rate Split Lab [%]	Mat [%]	Equip [%]	Labour [$]	Materials [$]	Construction Equipment [$]	Total DFL Hours [hours]	Estimate Class	Assumptions
408	Item-4-Storage Tank Cover Gas Chilled Condenser - Inlet 2", Outlet 2"		PROC 4.2.1.3		$ -	45%	$ 317.23	$ 1,022.18				$ 1,022.18	$ -	$ -	25.0 hrs		
409	Item-5-Cover Gas Vent Control Pnuematic Valve & Accessories- 2 "		PROC 4.2.1.2		$ -	45%	$ 317.23	$ 1,812.18				$ 1,022.18	$ -	$ 790.00	25.0 hrs		
410	Item-7-Cover Gas Relief Valve 2 "		PROC 4.2.1.2		$ -	45%	$ 20.62	$ 686.44				$ 66.44	$ -	$ 620.00	1.6 hrs		
411	item-10-Main Outlet Header Isolation Valve 3 "		PROC 4.2.1.2		$ -	45%	$ 20.62	$ 646.44				$ 66.44	$ -	$ 580.00	1.6 hrs		
412	Item-13&14- Outlet Isolation Valve - 3 "		PROC 4.2.1.2		$ -	45%	$ 20.62	$ 646.44				$ 66.44	$ -	$ 580.00	1.6 hrs		
413	Item - 18 & 19- Inlet Isolation Valve - 2"		PROC 4.2.1.2		$ -	45%	$ 41.24	$ 1,052.88				$ 132.88	$ -	$ 920.00	3.2 hrs		
414	Item - 27 - Cover Gas Supply Isolation Valve - 2"		PROC 4.2.1.2		$ -	45%	$ 41.24	$ 1,292.88				$ 132.88	$ -	$ 1,160.00	3.2 hrs		
415	Item - 30 - Vacuum Relief Valve - 2"		PROC 4.2.1.2		$ -	45%	$ 475.84	$ 3,873.27				$ 1,533.27	$ -	$ 2,340.00	37.5 hrs		
416	Item - 31- Pressure Transmitter		PROC 4.2.1.3		$ -	45%	$ 313.19	$ 1,526.17				$ 1,009.17	$ -	$ 517.00	25.0 hrs		
417	Item- 35 & 36 - Level Transmitter		PROC 4.2.1.3		$ -	45%	$ 417.59	$ 5,883.55				$ 1,345.55	$ -	$ 4,538.00	33.3 hrs		
418	Main Contractor's mark-up for storage, freight, transportation and profit. Say, 14% of material cost.		PROC 4.2.5.4	696,337.03	$ 696,337.03	45%	$ 125,340.66	$ 821,677.69	40%	0%	60%	$ 328,671.08	$ -	$ 493,006.61	4,755.6 hrs		
	TRF/SUP Feed Tank (2 ea)				$ -	45%	$ -	$ -				$ -	$ -	$ -	-		
419	Tanks 100 Mg 38110 SS 304 Class 3		PROC 4.2.5.4	698,160.00	$ 1,396,320.00	45%	$ -	$ 1,396,320.00	0%	100%	0%	$ -	$ 1,396,320.00	$ -	-		From previous estimate
420	Tanks 100 Mg 38110 - Installation		PROC 4.2.5.4	13,500.00	$ 27,000.00	45%	$ -	$ 27,000.00	0%	85%	15%	$ -	$ 22,950.00	$ 4,050.00	-		From previous estimate
421	Tanks 100 Mg 38110 - Commissioning		PROC 4.2.5.4	4,050.00	$ 32,400.00	45%	$ 10,206.00	$ 42,606.00	70%	15%	15%	$ 29,824.20	$ 6,390.90	$ 6,390.90	443.5 hrs		From previous estimate
422	Valves		PROC 4.2.1.2		$ -	45%	$ 82.48	$ 265.77				$ 265.77	$ -	$ -	6.5 hrs		
423	Pressure sensors		PROC 4.2.1.3		$ -	45%	$ 634.46	$ 3,078.36				$ 2,044.36	$ -	$ 1,034.00	50.0 hrs		
424	Level sensors		PROC 4.2.1.3		$ -	45%	$ 845.94	$ 11,801.82				$ 2,725.82	$ -	$ 9,076.00	66.6 hrs		
425	Pressure Gauges		PROC 4.2.1.3		$ -	45%	$ 845.94	$ 8,697.82				$ 2,725.82	$ -	$ 5,972.00	66.6 hrs		
426	Piping - S Steel - Inlets - 3 " for 100 Mg Tanks		PROC 4.2.1.1		$ -	45%	$ 63,445.73	$ 212,258.75				$ 204,436.25	$ -	$ 7,822.50	4,998.0 hrs		
427	Piping - S Steel - Outlet - 3" for 100 Mg Tanks		PROC 4.2.1.1		$ -	45%	$ 47,584.30	$ 161,149.69				$ 153,327.19	$ -	$ 7,822.50	3,748.5 hrs		
428	Switches - 2 level		PROC 4.2.1.3		$ -	45%	$ 730.78	$ 6,398.72				$ 2,354.72	$ -	$ 4,044.00	58.3 hrs		
429	Transmitters - 2 ea		PROC 4.2.1.3		$ -	45%	$ 835.17	$ 4,907.11				$ 2,691.11	$ -	$ 2,216.00	66.6 hrs		
430	Beetle - Leak Detection - 1 ea		PROC 4.2.1.3		$ -	45%	$ 417.59	$ 2,861.55				$ 1,345.55	$ -	$ 1,516.00	33.3 hrs		
431	Isolation Valve		PROC 4.2.1.2		$ -	45%	$ 41.24	$ 5,286.88				$ 132.88	$ -	$ 5,154.00	3.2 hrs		
432	Data Cables to Control room		Bldg 4.1.3.1	12.10	$ 2,178.00	45%	$ 196.02	$ 2,374.02	20%	60%	20%	$ 474.80	$ 1,424.41	$ 474.80	7.0 hrs		
433	Main Contractor's mark-up for storage, freight, transportation and profit. Say, 14% of material cost.		PROC 4.2.5.4	199,791.94	$ 199,791.94	45%	$ 35,962.55	$ 235,754.49	40%	0%	60%	$ 94,301.80	$ -	$ 141,452.70	1,364.5 hrs		
	TRF/SUP Product Tank (2 ea)				$ -	45%	$ -	$ -				$ -	$ -	$ -	-		
434	Tanks 100 Mg 38110 SS 304 Class 3		PROC 4.2.5.4	698,160.00	$ 1,396,320.00	45%	$ -	$ 1,396,320.00	0%	100%	0%	$ -	$ 1,396,320.00	$ -	-		From previous estimate
435	Tanks 100 Mg 38110 - Installation		PROC 4.2.5.4	13,500.00	$ 27,000.00	45%	$ -	$ 27,000.00	0%	85%	15%	$ -	$ 22,950.00	$ 4,050.00	-		From previous estimate
436	Tanks 100 Mg 38110 - Commissioning		PROC 4.2.5.4	4,050.00	$ 32,400.00	45%	$ 10,206.00	$ 42,606.00	70%	15%	15%	$ 29,824.20	$ 6,390.90	$ 6,390.90	443.5 hrs		From previous estimate
437	Valves		PROC 4.2.1.2		$ -	45%	$ 82.48	$ 265.77				$ 265.77	$ -	$ -	6.5 hrs		
438	Pressure sensors		PROC 4.2.1.3		$ -	45%	$ 634.46	$ 3,078.36				$ 2,044.36	$ -	$ 1,034.00	50.0 hrs		
439	Level sensors		PROC 4.2.1.3		$ -	45%	$ 845.94	$ 11,801.82				$ 2,725.82	$ -	$ 9,076.00	66.6 hrs		
440	Pressure Gauges		PROC 4.2.1.3		$ -	45%	$ 845.94	$ 8,697.82				$ 2,725.82	$ -	$ 5,972.00	66.6 hrs		
441	Piping - S Steel - Inlets - 3 " for 100 Mg Tanks		PROC 4.2.1.1		$ -	45%	$ 63,445.73	$ 212,258.75				$ 204,436.25	$ -	$ 7,822.50	4,998.0 hrs		
442	Piping - S Steel - Outlet - 3" for 100 Mg Tanks		PROC 4.2.1.1		$ -	45%	$ 47,584.30	$ 161,149.69				$ 153,327.19	$ -	$ 7,822.50	3,748.5 hrs		
443	Switches - 2 level		PROC 4.2.1.3		$ -	45%	$ 730.78	$ 6,398.72				$ 2,354.72	$ -	$ 4,044.00	58.3 hrs		
444	Transmitters - 2 ea		PROC 4.2.1.3		$ -	45%	$ 835.17	$ 4,907.11				$ 2,691.11	$ -	$ 2,216.00	66.6 hrs		
445	Beetle - Leak Detection - 1 ea		PROC 4.2.1.3		$ -	45%	$ 417.59	$ 2,861.55				$ 1,345.55	$ -	$ 1,516.00	33.3 hrs		
446	Isolation Valve		PROC 4.2.1.2		$ -	45%	$ 41.24	$ 5,286.88				$ 132.88	$ -	$ 5,154.00	3.2 hrs		
447	Data Cables to Control room		Bldg 4.1.3.1	12.10	$ 2,178.00	45%	$ 196.02	$ 2,374.02	20%	60%	20%	$ 474.80	$ 1,424.41	$ 474.80	7.0 hrs		
448	Main Contractor's mark-up for storage, freight, transportation and profit. Say, 14% of material cost.		PROC 4.2.5.4	199,791.94	$ 199,791.94	45%	$ 35,962.55	$ 235,754.49	40%	0%	60%	$ 94,301.80	$ -	$ 141,452.70	1,364.5 hrs		
	Downgraded D2O Tank (2 ea)				$ -	45%	$ -	$ -				$ -	$ -	$ -	-		
449	Tanks 50 Mg 38500 SS 304 Class 3		PROC 4.2.5.4	428,000.00	$ 856,000.00	45%	$ -	$ 856,000.00	0%	100%	0%	$ -	$ 856,000.00	$ -	-		Prorated
450	Tanks 50 Mg 38500 - Installation		PROC 4.2.5.4	13,500.00	$ 27,000.00	45%	$ -	$ 27,000.00	0%	85%	15%	$ -	$ 22,950.00	$ 4,050.00	-		Prorated
451	Tanks 50 Mg 38500 - Commissioning		PROC 4.2.5.4	4,050.00	$ 32,400.00	45%	$ 10,206.00	$ 42,606.00	70%	15%	15%	$ 29,824.20	$ 6,390.90	$ 6,390.90	443.5 hrs		From previous estimate
452	Valves; 3"		PROC 4.2.1.2		$ -	45%	$ 82.48	$ 3,425.77				$ 265.77	$ -	$ 3,160.00	6.5 hrs		
453	Pressure sensors		PROC 4.2.1.3		$ -	45%	$ 634.46	$ 3,078.36				$ 2,044.36	$ -	$ 1,034.00	50.0 hrs		
454	Level sensors		PROC 4.2.1.3		$ -	45%	$ 845.94	$ 11,801.82				$ 2,725.82	$ -	$ 9,076.00	66.6 hrs		
455	Pressure Gauges		PROC 4.2.1.3		$ -	45%	$ 845.94	$ 8,697.82				$ 2,725.82	$ -	$ 5,972.00	66.6 hrs		
456	Piping - S Steel - Inlets - 3 " for 100 Mg Tanks		PROC 4.2.1.1		$ -	45%	$ 63,445.73	$ 212,258.75				$ 204,436.25	$ -	$ 7,822.50	4,998.0 hrs		
457	Piping - S Steel - Outlet - 3" for 100 Mg Tanks		PROC 4.2.1.1		$ -	45%	$ 47,584.30	$ 161,149.69				$ 153,327.19	$ -	$ 7,822.50	3,748.5 hrs		
458	Switches - 2 level		PROC 4.2.1.3		$ -	45%	$ 730.78	$ 6,398.72				$ 2,354.72	$ -	$ 4,044.00	58.3 hrs		
459	Transmitters - 2 ea		PROC 4.2.1.3		$ -	45%	$ 835.17	$ 4,907.11				$ 2,691.11	$ -	$ 2,216.00	66.6 hrs		
460	Beetle - Leak Detection - 1 ea		PROC 4.2.1.3		$ -	45%	$ 417.59	$ 2,861.55				$ 1,345.55	$ -	$ 1,516.00	33.3 hrs		
461	Isolation Valve		PROC 4.2.1.2		$ -	45%	$ 41.24	$ 5,286.88				$ 132.88	$ -	$ 5,154.00	3.2 hrs		
462	Data Cables to Control room		Bldg 4.1.3.1	12.10	$ 2,178.00	45%	$ 196.02	$ 2,374.02	20%	60%	20%	$ 474.80	$ 1,424.41	$ 474.80	7.0 hrs		
463	Item - 38 & 39 - Transfer Pump; including Item 40 & 41 24 HP motor		PROC 4.2.2.4		$ -	45%	$ 422.97	$ 29,272.91				$ 1,362.91	$ -	$ 27,910.00	33.3 hrs		
464	Item - 42 & 43 - Check Valve 1 1/2 "		PROC 4.2.1.2		$ -	45%	$ 41.24	$ 2,210.88				$ 132.88	$ -	$ 2,078.00	3.2 hrs		
465	Item - 44 - Main Inlet Header Check valve 1 1/2 "		PROC 4.2.1.2		$ -	45%	$ 20.62	$ 646.44				$ 66.44	$ -	$ 580.00	1.6 hrs		
466	Item - 45 - Cover Gas Vent Control Valve pnuematic Control Valve and Accessories 2"		PROC 4.2.1.2		$ -	45%	$ 20.62	$ 856.44				$ 66.44	$ -	$ 790.00	1.6 hrs		
467	Item - 46 & 47 - Outlet Control Valve and Accessories 1 1/2"		PROC 4.2.1.2		$ -	45%	$ 41.24	$ 1,712.88				$ 132.88	$ -	$ 1,580.00	3.2 hrs		
468	Item 48 & 49 - Inlet Control Valve Pnuematic Control Valve & Accessories 1 1/2"		PROC 4.2.1.2		$ -	45%	$ 41.24	$ 1,712.88				$ 132.88	$ -	$ 1,580.00	3.2 hrs		
469	Item - 50 - Cover Gas Relief Valve 2 "		PROC 4.2.1.2		$ -	45%	$ 20.62	$ 686.44				$ 66.44	$ -	$ 620.00	1.6 hrs		
470	Item 51 & 52 - Relief Valve - 1 1/2 "		PROC 4.2.1.2		$ -	45%	$ 41.24	$ 1,372.88				$ 132.88	$ -	$ 1,240.00	3.2 hrs		
471	Item 53 & 54 - Inlet Isolation Valve 2 1/2"		PROC 4.2.1.2		$ -	45%	$ 41.24	$ 1,672.88				$ 132.88	$ -	$ 1,540.00	3.2 hrs		
472	Item 55 - Cover Gas Supply Isolation Valve 2 "		PROC 4.2.1.2		$ -	45%	$ 20.62	$ 646.44				$ 66.44	$ -	$ 580.00	1.6 hrs		
473	Item 56 - Cover Gas Drain Valve 2"		PROC 4.2.1.2		$ -	45%	$ 20.62	$ 646.44				$ 66.44	$ -	$ 580.00	1.6 hrs		

DNGS Heavy Water Management Building - Construction Cost Estimate

Ref	Item	NRM Ref	PBS	All-in Rate	All-in Total	Indirect Costs % of Labour Total	Indirect Total	Total Cost	All-in Rate Split Lab	Mat	Equip	Labour	Materials	Construction Equipment	Total DFL Hours	Estimate Class	Assumptions
				[$/unit]	[$]	[%]	[$]	[$]	[%]	[%]	[%]	[$]	[$]	[$]	[hours]		
474	Item 57 - Vent Isolation Valve 2 "		PROC 4.2.1.2		$ -	45%	$ 20.62	$ 646.44				$ 66.44	$ -	$ 580.00	1.6 hrs		
475	Item - 58 - Recirculation Isolation Valve 1 1/2"		PROC 4.2.1.2		$ -	45%	$ 20.62	$ 646.44				$ 66.44	$ -	$ 580.00	1.6 hrs		
476	Item - 59 - Clean up system Isolation Valve 1 1/2"		PROC 4.2.1.2		$ -	45%	$ 20.62	$ 646.44				$ 66.44	$ -	$ 580.00	1.6 hrs		
477	Item - 60 & 61 - Outlet Isolation Valve 1 1/2"		PROC 4.2.1.2		$ -	45%	$ 41.24	$ 1,292.88				$ 132.88	$ -	$ 1,160.00	3.2 hrs		
478	Item - 62 - Transfer System Supply Isolation Valve 1 1/2"		PROC 4.2.1.2		$ -	45%	$ 20.62	$ 646.44				$ 66.44	$ -	$ 580.00	1.6 hrs		
479	Item - 63 - Main Discharge Header Isolation Valve 1 1/2"		PROC 4.2.1.2		$ -	45%	$ 20.62	$ 646.44				$ 66.44	$ -	$ 580.00	1.6 hrs		
480	Item - 64 & 65 - Main Inlet Header Spare Connection Isolation Valve 1 1/2"		PROC 4.2.1.2		$ -	45%	$ 41.24	$ 1,292.88				$ 132.88	$ -	$ 1,160.00	3.2 hrs		
481	Item - 66 - Main Inlet Header Isolation Valve 1 1/2"		PROC 4.2.1.2		$ -	45%	$ 20.62	$ 526.44				$ 66.44	$ -	$ 460.00	1.6 hrs		
482	Item - 67 - Vacuum Relief Valve - 2"		PROC 4.2.1.2		$ -	45%	$ 237.92	$ 2,037.64				$ 766.64	$ -	$ 1,271.00	18.7 hrs		
483	Item - 68 - Recirculation Flow Orifice 1 1/2"		PROC 4.2.1.3		$ -	45%	$ 20.62	$ 646.44				$ 66.44	$ -	$ 580.00	1.6 hrs		
484	Item 69 & 70 - Commissioning Strainer 2 1/2"		PROC 4.2.1.3		$ -	45%	$ 41.24	$ 732.88				$ 132.88	$ -	$ 600.00	3.2 hrs		
485	Item 71 & 72 - Level Transmitter		PROC 4.2.1.3		$ -	45%	$ 417.59	$ 5,883.55				$ 1,345.55	$ -	$ 4,538.00	33.3 hrs		
486	Item 73 - Cover Gas Pressure Transmitter		PROC 4.2.1.3		$ -	45%	$ 313.19	$ 1,526.17				$ 1,009.17	$ -	$ 517.00	25.0 hrs		
487	Main Contractor's mark-up for storage, freight, transportation and profit. Say, 14% of material cost.		PROC 4.2.5.4	124,147.14	$ 124,147.14	45%	$ 22,346.49	$ 146,493.63	40%	0%	60%	$ 58,597.45	$ -	$ 87,896.18	847.8 hrs		
	Downgraded D2O Tank (1 ea)				$ -	45%	$ -	$ -				$ -	$ -	$ -	-		
488	Tanks 25 Mg 38500 SS 304 Class 3		PROC 4.2.5.4	264,000.00	$ 264,000.00	45%	$ -	$ 264,000.00	0%	100%	0%	$ -	$ 264,000.00	$ -	-		Prorated
489	Tanks 25 Mg 38500 - Installation		PROC 4.2.5.4	13,500.00	$ 13,500.00	45%	$ -	$ 13,500.00	0%	85%	15%	$ -	$ 11,475.00	$ 2,025.00	-		Prorated
490	Tanks 25 Mg 38500 - Commissioning		PROC 4.2.5.4	4,050.00	$ 32,400.00	45%	$ 10,206.00	$ 42,606.00	70%	15%	15%	$ 29,824.20	$ 6,390.90	$ 6,390.90	443.5 hrs		From previous estimate
491	Valves; 2"		PROC 4.2.1.2		$ -	45%	$ 41.24	$ 1,372.88				$ 132.88	$ -	$ 1,240.00	3.2 hrs		
492	Pressure sensors		PROC 4.2.1.3		$ -	45%	$ 211.49	$ 1,198.45				$ 681.45	$ -	$ 517.00	16.7 hrs		
493	Level sensors		PROC 4.2.1.3		$ -	45%	$ 422.97	$ 5,900.91				$ 1,362.91	$ -	$ 4,538.00	33.3 hrs		
494	Pressure Gauges		PROC 4.2.1.3		$ -	45%	$ 422.97	$ 4,348.91				$ 1,362.91	$ -	$ 2,986.00	33.3 hrs		
495	Piping - S Steel - Inlets - 3 " for 100 Mg Tanks		PROC 4.2.1.1		$ -	45%	$ 2,280.08	$ 11,258.18				$ 7,346.93	$ -	$ 3,911.25	179.6 hrs		
496	Piping - S Steel - Outlet - 3" for 100 Mg Tanks		PROC 4.2.1.1		$ -	45%	$ 2,280.08	$ 11,258.18				$ 7,346.93	$ -	$ 3,911.25	179.6 hrs		
497	Switches - 2 level		PROC 4.2.1.3		$ -	45%	$ 365.39	$ 3,199.36				$ 1,177.36	$ -	$ 2,022.00	29.2 hrs		
498	Transmitters - 2 ea		PROC 4.2.1.3		$ -	45%	$ 417.59	$ 2,453.55				$ 1,345.55	$ -	$ 1,108.00	33.3 hrs		
499	Beetle - Leak Detection - 1 ea		PROC 4.2.1.3		$ -	45%	$ 208.79	$ 1,430.78				$ 672.78	$ -	$ 758.00	16.7 hrs		
500	Isolation Valve		PROC 4.2.1.2		$ -	45%	$ 20.62	$ 2,643.44				$ 66.44	$ -	$ 2,577.00	1.6 hrs		
501	Data Cables to Control room		Bldg 4.1.3.1	12.10	$ 1,089.00	45%	$ 98.01	$ 1,187.01	20%	60%	20%	$ 237.40	$ 712.21	$ 237.40	3.5 hrs		
502	Item - 100 - Transfer System Feed Isolation Valve - 1 1/2"		PROC 4.2.1.2		$ -	45%	$ 20.62	$ 646.44				$ 66.44	$ -	$ 580.00	1.6 hrs		
503	Main Contractor's mark-up for storage, freight, transportation and profit. Say, 14% of material cost.		PROC 4.2.5.4	39,560.93	$ 39,560.93	45%	$ 7,120.97	$ 46,681.90	40%	0%	60%	$ 18,672.76	$ -	$ 28,009.14	270.2 hrs		
	CLEAN Up D2O Tank (3 ea)				$ -	45%	$ -	$ -				$ -	$ -	$ -	-		
504	Tanks 25 Mg 38500 SS 304 Class 3		PROC 4.2.5.4	264,000.00	$ 792,000.00	45%	$ -	$ 792,000.00	0%	100%	0%	$ -	$ 792,000.00	$ -	-		Prorated
505	Tanks 25 Mg 38500 - Installation		PROC 4.2.5.4	13,500.00	$ 40,500.00	45%	$ -	$ 40,500.00	0%	85%	15%	$ -	$ 34,425.00	$ 6,075.00	-		Prorated
506	Tanks 25 Mg 38500 - Commissioning		PROC 4.2.5.4	4,050.00	$ 32,400.00	45%	$ 10,206.00	$ 42,606.00	70%	15%	15%	$ 29,824.20	$ 6,390.90	$ 6,390.90	443.5 hrs		From previous estimate
507	Valves; 2"		PROC 4.2.1.2		$ -	45%	$ 123.72	$ 4,118.65				$ 398.65	$ -	$ 3,720.00	9.7 hrs		
508	Pressure sensors		PROC 4.2.1.3		$ -	45%	$ 634.46	$ 3,595.36				$ 2,044.36	$ -	$ 1,551.00	50.0 hrs		
509	Level sensors		PROC 4.2.1.3		$ -	45%	$ 1,268.91	$ 17,702.73				$ 4,088.73	$ -	$ 13,614.00	100.0 hrs		
510	Pressure Gauges		PROC 4.2.1.3		$ -	45%	$ 1,268.91	$ 13,046.73				$ 4,088.73	$ -	$ 8,958.00	100.0 hrs		
511	Piping - S Steel - Inlets - 3 " for 100 Mg Tanks		PROC 4.2.1.1		$ -	45%	$ 6,899.72	$ 33,966.19				$ 22,232.44	$ -	$ 11,733.75	543.5 hrs		
512	Piping - S Steel - Outlet - 3" for 100 Mg Tanks		PROC 4.2.1.1		$ -	45%	$ 6,899.72	$ 33,966.19				$ 22,232.44	$ -	$ 11,733.75	543.5 hrs		
513	Switches - 2 level		PROC 4.2.1.3		$ -	45%	$ 1,096.16	$ 9,598.08				$ 3,532.08	$ -	$ 6,066.00	87.5 hrs		
514	Transmitters - 2 ea		PROC 4.2.1.3		$ -	45%	$ 1,252.76	$ 7,360.66				$ 4,036.66	$ -	$ 3,324.00	100.0 hrs		
515	Beetle - Leak Detection - 1 ea		PROC 4.2.1.2		$ -	45%	$ 626.38	$ 4,292.33				$ 2,018.33	$ -	$ 2,274.00	50.0 hrs		
516	Isolation Valve		PROC 4.2.1.2		$ -	45%	$ 61.86	$ 7,930.33				$ 199.33	$ -	$ 7,731.00	4.9 hrs		
517	Data Cables to Control room		Bldg 4.1.3.1	12.10	$ 3,267.00	45%	$ 294.03	$ 3,561.03	20%	60%	20%	$ 712.21	$ 2,136.62	$ 712.21	10.4 hrs		
518	Item - 75 & 76 - Clean up Product Transfer Pump Suction 1 1/2" Discharge 1 1/2" including Item 78 & 79 Pump motor 4 HP		PROC 4.2.2.4		$ -	45%	$ 422.97	$ 29,272.91				$ 1,362.91	$ -	$ 27,910.00	33.3 hrs		
519	Item - 77 - Oxidation unit Feed Pump Suction 1" Discharge 1/2" including Item 80 Oxidation Pump Motor 1 HP		PROC 4.2.2.4		$ -	45%	$ 211.49	$ 14,636.45				$ 681.45	$ -	$ 13,955.00	16.7 hrs		
520	Item - 81 - Cover Gas Vent Control Valve Pnuematic Valve & Accessories 2 "		PROC 4.2.1.2		$ -	45%	$ 20.62	$ 856.44				$ 66.44	$ -	$ 790.00	1.6 hrs		
521	Item - 82 - Inlet Control Valve Pnuematic Control Valve & Accessories 1 1/2"		PROC 4.2.1.2		$ -	45%	$ 20.62	$ 646.44				$ 66.44	$ -	$ 580.00	1.6 hrs		
522	Item - 83 - Inlet Control Valve Pnuematic Control Valve & Accessories 1 1/2"		PROC 4.2.1.2		$ -	45%	$ 20.62	$ 646.44				$ 66.44	$ -	$ 580.00	1.6 hrs		
523	Item - 84 & 85- Outlet Control Valve Pnuematic Control Valve & Accessories 1"		PROC 4.2.1.2		$ -	45%	$ 41.24	$ 1,712.88				$ 132.88	$ -	$ 1,580.00	3.2 hrs		
524	Item - 86 - Cover Gas Relief Valve 2"		PROC 4.2.1.2		$ -	45%	$ 20.62	$ 686.44				$ 66.44	$ -	$ 620.00	1.6 hrs		
525	Item - 87, 88,& 89 - Relief Valve 3/4"		PROC 4.2.1.2		$ -	45%	$ 61.86	$ 4,012.33				$ 199.33	$ -	$ 3,813.00	4.9 hrs		
526	Item - 90 - Station Upgrader Feed Isolation Valve 2 1/2"		PROC 4.2.1.2		$ -	45%	$ 20.62	$ 646.44				$ 66.44	$ -	$ 580.00	1.6 hrs		
527	Item - 91 - Vent Isolation Valve 2"		PROC 4.2.1.2		$ -	45%	$ 20.62	$ 2,643.44				$ 66.44	$ -	$ 2,577.00	1.6 hrs		
528	Item - 92 - Cover Gas Supply Isolation Valve 2"		PROC 4.2.1.2		$ -	45%	$ 20.62	$ 66.44				$ 66.44	$ -	$ -	1.6 hrs		
529	Item - 93 - Isolation Valve 2"		PROC 4.2.1.2		$ -	45%	$ 20.62	$ 2,643.44				$ 66.44	$ -	$ 2,577.00	1.6 hrs		
530	Item - 94 - Cover Gas Drain Valve 2"		PROC 4.2.1.2		$ -	45%	$ 20.62	$ 646.44				$ 66.44	$ -	$ 580.00	1.6 hrs		
531	Item - 95 - Feed Isolation Valve 2 1/2"		PROC 4.2.1.2		$ -	45%	$ 20.62	$ 646.44				$ 66.44	$ -	$ 580.00	1.6 hrs		
532	Item - 96, 97, 98 & 99 - Isolation Valve 1 1/2"		PROC 4.2.1.2		$ -	45%	$ 82.48	$ 10,573.77				$ 265.77	$ -	$ 10,308.00	6.5 hrs		
533	Item - 101 & 102 - Discharge Isolation Valve - 1 1/2"		PROC 4.2.1.2		$ -	45%	$ 41.24	$ 1,292.88				$ 132.88	$ -	$ 1,160.00	3.2 hrs		
534	Item - 103 - Isolation Valve - 1 1/2"		PROC 4.2.1.2		$ -	45%	$ 20.62	$ 2,643.44				$ 66.44	$ -	$ 2,577.00	1.6 hrs		
535	Item - 104 - Clean Up Feed Isolation Valves - 1 1/2"		PROC 4.2.1.2		$ -	45%	$ 20.62	$ 646.44				$ 66.44	$ -	$ 580.00	1.6 hrs		
536	Item - 105 - Vacuum Relief Valve 2"		PROC 4.2.1.2		$ -	45%	$ 237.92	$ 2,037.64				$ 766.64	$ -	$ 1,271.00	18.7 hrs		
537	Item - 106 Recirculation Flow Orifice 1"		PROC 4.2.1.2		$ -	45%	$ 17.45	$ 56.22				$ 56.22	$ -	$ -	1.4 hrs		
538	Item - 107 & 108 - Commissioning Strainer 1 1/2"		PROC 4.2.1.2		$ -	45%	$ 41.24	$ 132.88				$ 132.88	$ -	$ -	3.2 hrs		
539	Item - 109 - Cover Gas Pressure Transmitter		PROC 4.2.1.2		$ -	45%	$ 20.36	$ 582.60				$ 65.60	$ -	$ 517.00	1.6 hrs		

DNGS Heavy Water Management Building - Construction Cost Estimate

Ref	Item	NRM Ref	PBS	All-in Rate [$/unit]	All-in Total [$]	Indirect Costs % of Labour Total [%]	Indirect Total [$]	Total Cost [$]	All-in Rate Split Lab [%]	Mat [%]	Equip [%]	Labour [$]	Materials [$]	Construction Equipment [$]	Total DFL Hours [hours]	Estimate Class	Assumptions
540	Item - 110 & 111 - Level Transmitter		PROC 4.2.1.2		$ -	45%	$ 40.71	$ 4,669.19				$ 131.19	$ -	$ 4,538.00	3.2 hrs		
541	Main Contractor's mark-up for storage, freight, transportation and profit. Say, 14% of material cost.		PROC 4.2.5.4	116,893.35	$ 116,893.35	45%	$ 21,040.80	$ 137,934.16	40%	0%	60%	$ 55,173.66	$ -	$ 82,760.49	798.3 hrs		
	TIE-ins for new tanks with Exstg tanks (at Exstg bldg)				$ -	45%	$ -	$ -				$ -	$ -	$ -	-		
	PHT D20 Supply 38110 - 100 Mg (8 Tanks)				$ -	45%	$ -	$ -				$ -	$ -	$ -	-		
542	Cutting/new 3 M pipe/Butt weld/Cut Off Valve/elbows/Tees/Testing/Tagging		STIE 4.2.11.1		$ -	45%	$ 17,391.60	$ 141,839.58				$ 56,039.58	$ -	$ 85,800.00	1,370.0 hrs		
	Moderator D20 Supply 38110 - 100 Mg (7 Tanks)				$ -	45%	$ -	$ -				$ -	$ -	$ -	-		
543	Cutting/new 3 M pipe/Butt weld/Cut Off Valve/elbows/Tees/Testing/Tagging		STIE 4.2.11.1		$ -	45%	$ 15,217.65	$ 124,109.64				$ 49,034.64	$ -	$ 75,075.00	1,198.8 hrs		
	TRF/SUP Feed 38110 - 100 Mg (2 Tanks)				$ -	45%	$ -	$ -				$ -	$ -	$ -	-		
544	Cutting/new 3 M pipe/Butt weld/Cut Off Valve/elbows/Tees/Testing/Tagging		STIE 4.2.11.1		$ -	45%	$ 4,347.90	$ 35,459.90				$ 14,009.90	$ -	$ 21,450.00	342.5 hrs		
	TRF/SUP Product 38110 - 100 Mg (2 Tanks)				$ -	45%	$ -	$ -				$ -	$ -	$ -	-		
545	Cutting/new 3 M pipe/Butt weld/Cut Off Valve/elbows/Tees/Testing/Tagging		STIE 4.2.11.1		$ -	45%	$ 4,347.90	$ 35,459.90				$ 14,009.90	$ -	$ 21,450.00	342.5 hrs		
	Downgraded D20 38500 - 50 Mg (2 Tanks)				$ -	45%	$ -	$ -				$ -	$ -	$ -	-		
546	Cutting/new 3 M pipe/Butt weld/Cut Off Valve/elbows/Tees/Testing/Tagging		STIE 4.2.11.1		$ -	45%	$ 4,347.90	$ 32,159.90				$ 14,009.90	$ -	$ 18,150.00	342.5 hrs		
	Downgraded D20 38500 - 25 Mg (1 Tank)				$ -	45%	$ -	$ -				$ -	$ -	$ -	-		
547	Cutting/new 3 M pipe/Butt weld/Cut Off Valve/elbows/Tees/Testing/Tagging		STIE 4.2.11.1		$ -	45%	$ 2,173.95	$ 15,254.95				$ 7,004.95	$ -	$ 8,250.00	171.3 hrs		
	D20 Clean up - 38410 - 25 Mg (3 Tanks)				$ -	45%	$ -	$ -				$ -	$ -	$ -	-		
548	Cutting/new 3 M pipe/Butt weld/Cut Off Valve/elbows/Tees/Testing/Tagging		STIE 4.2.11.1		$ -	45%	$ 6,521.85	$ 45,764.84				$ 21,014.84	$ -	$ 24,750.00	513.8 hrs		
					$ -	45%	$ -	$ -				$ -	$ -	$ -	-		
549	Rubber mats at all likely spill locations (25 ea) (6X4ft)		STIE 4.2.11.1	500.00	$ 12,500.00	45%	$ -	$ 12,500.00	0%	100%	0%	$ -	$ 12,500.00	$ -	-		
					$ -	45%	$ -	$ -				$ -	$ -	$ -	-		
550	Cathodic protection including all accessories (25 ea)		Bldg 4.1.5.1		$ -	45%	$ 5,365.67	$ 79,164.39				$ 17,289.39	$ -	$ 61,875.00	428.1 hrs		
					$ -	45%	$ -	$ -				$ -	$ -	$ -	-		
551	Crane Heavy duty Rental (for 3 months @ $40,000/month)		Bldg 4.2.4.1	40,000.00	$ 120,000.00	45%	$ -	$ 120,000.00	0%	0%	100%	$ -	$ -	$ 120,000.00	-		
					$ -	45%	$ -	$ -				$ -	$ -	$ -	-		
552	Stack Monitor (installation, electrical connections, switches)		PROC 4.2.2.6	275,000.00	$ 550,000.00	45%	$ 74,250.00	$ 624,250.00	30%	60%	10%	$ 187,275.00	$ 374,550.00	$ 62,425.00	2,769.6 hrs		
					$ -	45%	$ -	$ -				$ -	$ -	$ -	-		
553	Stainless Steel Ducts in Effluent Stack (14" dia) - ALL		PROC 4.2.2.6	190.00	$ 26,600.00	45%	$ 3,591.00	$ 30,191.00	30%	60%	10%	$ 9,057.30	$ 18,114.60	$ 3,019.10	134.0 hrs		
					$ -	45%	$ -	$ -				$ -	$ -	$ -	-		
554	Stainless Steel hoods and cover		PROC 4.2.2.6	50,000.00	$ 150,000.00	45%	$ 20,250.00	$ 170,250.00	30%	60%	10%	$ 51,075.00	$ 102,150.00	$ 17,025.00	755.4 hrs		
	COMMON GENERAL ITEMS				$ -	45%	$ -	$ -				$ -	$ -	$ -	-		
555	Cable Trays c/w hanging supports and metal brackets		Bldg 4.1.3.1		$ -	45%	$ 6,263.79	$ 24,377.62				$ 20,183.32	$ -	$ 4,194.30	499.8 hrs		
556	Pipe supports c/w supports and rawl plugs		STIE 4.2.1.1		$ -	45%	$ 2,918.50	$ 12,348.07				$ 9,404.07	$ 460.00	$ 2,484.00	229.9 hrs		
557	Instrumentation - SCADA (tanks to Control Room)		PROC 4.3.5.1	22,000.00	$ 550,000.00	45%	$ 74,250.00	$ 624,250.00	30%	60%	10%	$ 187,275.00	$ 374,550.00	$ 62,425.00	2,709.7 hrs		
					$ -	45%	$ -	$ -				$ -	$ -	$ -	-		
	Tie-ins to existing services				$ -	45%	$ -	$ -				$ -	$ -	$ -	-		
558	X-ray scanning of tie-in locations		STIE 4.2.11.1	1,200.00	$ 4,800.00	45%	$ 432.00	$ 5,232.00	20%	10%	70%	$ 1,046.40	$ 523.20	$ 3,662.40	17.3 hrs		
					$ -	45%	$ -	$ -				$ -	$ -	$ -	-		
	Sub-Total				**$ 18,197,268.74**		**$ 1,536,141.21**	**$ 22,840,585.80**				**$ 4,586,535.78**	**$ 15,395,038.81**	**$ 2,859,011.21**	**96,310.4 hrs**		
	ELECTRICAL CONTROL SYSTEMS																
559	Main Control Panel (600 wide x 800deep); 2000A		Bldg 4.1.1.6	20,000.00	$ 20,000.00	45%	$ 2,700.00	$ 22,700.00	30%	60%	10%	$ 6,810.00	$ 13,620.00	$ 2,270.00	99.8 hrs		
560	Main Control Panel (600 wide x 800deep); 2500A		Bldg 4.1.1.6	25,000.00	$ 25,000.00	45%	$ 3,375.00	$ 28,375.00	30%	60%	10%	$ 8,512.50	$ 17,025.00	$ 2,837.50	124.8 hrs		
561	Main Control Panel (600 wide x 800deep); 3000A		Bldg 4.1.1.6	30,000.00	$ 30,000.00	45%	$ 4,050.00	$ 34,050.00	30%	60%	10%	$ 10,215.00	$ 20,430.00	$ 3,405.00	149.7 hrs		
					$ -		$ -	$ -				$ -	$ -	$ -	-		
562	Panel Boards; 2000A		Bldg 4.1.1.6		$ -	45%	$ 208.79	$ 19,053.86				$ 672.78	$ -	$ 18,381.08	16.7 hrs		
					$ -		$ -	$ -				$ -	$ -	$ -	-		
					$ -		$ -	$ -				$ -	$ -	$ -	-		
					$ -		$ -	$ -				$ -	$ -	$ -	-		
	Sub-Total				**$ 75,000.00**		**$ 10,333.79**	**$ 104,178.86**				**$ 26,210.28**	**$ 51,075.00**	**$ 26,893.58**	**390.9 hrs**		
	SPECIALIST EQUIPMENT																
563	Mono rail system; 1T		Bldg 4.2.4.3	4,115.00	$ 4,115.00	45%	$ 185.18	$ 4,300.18	10%	80%	10%	$ 430.02	$ 3,440.14	$ 430.02	6.4 hrs		
564	Mono rail system; 5T		Bldg 4.2.4.3	9,897.00	$ 9,897.00	45%	$ 445.37	$ 10,342.37	10%	80%	10%	$ 1,034.24	$ 8,273.89	$ 1,034.24	15.4 hrs		
					$ -		$ -	$ -				$ -	$ -	$ -	-		
	Sub-Total				**$ 14,012.00**		**$ 630.54**	**$ 14,642.54**				**$ 1,464.25**	**$ 11,714.03**	**$ 1,464.25**	**21.8 hrs**		
	TOTAL				**$ 28,567,039.86**		**$ 5,058,990.91**	**$ 45,604,124.36**				**$ 15,017,645.98**	**$ 21,968,886.81**	**$ 8,617,591.56**	**343,230.9 hrs**		

	LIFE CYCLE COSTINGS																
	Replacement roof materials				$ -		$ -	$ -									
565	Built up Roof at Lvl 115.00 - Re-roof at 25 years	2.3.1.3	Bldg 4.4.5.1	447.22	$ 268,329.60		$ -	$ 268,329.60									
566	Epoxy floor coatings (1 re-coat)		Bldg 4.4.6.3	47.35	$ 49,374.21		$ -	$ 49,374.21									
567	Duct controllers (15 years)		PROC 4.2.1.3	25,000.00	$ 25,000.00		$ -	$ 25,000.00									
568	Control valves (15 years)		PROC 4.2.1.2	90,000.00	$ 90,000.00		$ -	$ 90,000.00									
569	Valves (20 years)		PROC 4.2.1.2	73,000.00	$ 73,000.00		$ -	$ 73,000.00									
570	SCADA (25 years)		PROC 4.3.5.1	120,000.00	$ 120,000.00		$ -	$ 120,000.00									
571	Office furniture		Bldg 4.4.6.14-O	172,293.00	$ 172,293.00		$ -	$ 172,293.00									
572	Office flooring		Bldg 4.4.6.3-O	110.00	$ 27,500.00		$ -	$ 27,500.00									

DNGS Heavy Water Management Building - Construction Cost Estimate

Ref	Item	NRM Ref	PBS	All-in Rate		Indirect Costs		Total Cost	All-in Rate Split			Labour	Materials	Construction Equipment	Total DFL Hours	Estimate Class	Assumptions
					All-in Total	% of Labour Total	Indirect Total		Lab	Mat	Equip						
				[$/unit]	[$]	[%]	[$]	[$]	[%]	[%]	[%]	[$]	[$]	[$]	[hours]		
573	Washroom appliances		Bldg 4.4.6.14-O	57,200.00	$ 57,200.00		$ -	$ 57,200.00									
574	Pumps (20 years) - overhaul and new impellers		PROC 4.2.2.4	118,702.00	$ 118,702.00		$ -	$ 118,702.00									
575	Replacement of valves and controls to HVAC systems		PROC 4.2.1.7	155,000.00	$ 155,000.00		$ -	$ 155,000.00									
					$ -		$ -	$ -									
	Sub-Total				**$ 1,156,398.81**		**$ -**	**$ 1,156,398.81**									

11 Appendix E – Productivity Factors

11.1 Productivity Factor - Unzoned

The following represents the productivity factor for 'unzoned' areas:

Unzoned

Item	Event Description	Event Time minutes	Event Time per	Events per Shift	Total Non-productive Time	Total Productive Time
1	Basic Shift					10.00 hrs
	Less					
2	Food	30 mins	4 hours	1 nr	0.50 hrs	
3	Restroom Breaks	15 mins	Shift	1 nr	0.25 hrs	
4	Walking Time	7 mins	Regulated Break	2 nr	0.23 hrs	
5	Wash Time	15 mins	Shift	2 nr	0.50 hrs	
6	Non RP Change Time	15 mins	Shift	2 nr	0.50 hrs	
7	RP Change Time	-	Shift	2 nr	-	
8	Tools and Elecrical Tools Check	15 mins	Shift (at start of shift)	1 nr	0.25 hrs	
9	TCR's and Blanket Hot Work Permits, DCN83057 Work Plan, FME F	15 mins	Shift (at start of shift)	1 nr	0.25 hrs	
10	Job Brief Specific Hazards and JSAP Prior to Start	30 mins	Shift (at start of shift)	1 nr	0.50 hrs	
11	Job Brief Secific Hazards and JSAP Post Complete	30 mins	Shift (at start of shift)	1 nr	0.50 hrs	
12	Houskeeping	30 mins	Shift (at end of shift)	1 nr	0.50 hrs	
13	Working In Rubber Area (What is Max REM? Assume 5 Mins Per Hr	-	Hour	10 nr	-	
14	Constraints due to Night Shift	-	Shift (during shift)	1 nr	-	
15	Overtime Day and Saturday and Sunday	-	Shift (during shift)	1 nr	-	
16	Monitoring (Allow 5 events per shift @ 3mins)	-	Shift (during shift)	5 nr	-	
	Total To Work Site				**3.98 hrs**	**6.02 hrs**
17	Congestion Trade (Multi Trade in Same Area)	-	Mid	1 nr	-	
18	Congestion Physical (Limited Space)	-	Mid	1 nr	-	
19	Learning Curve	9 mins	Mid	1 nr	0.15 hrs	
	Total At Work Site				**0.15 hrs**	**-0.15 hrs**
	Total Productive Time					**5.87 hrs**
					Productivity	59%
					Factor Multiplier	**1.70**

11.2 Productivity Factor – Zone 3

The following represents the productivity factor for 'Zone 3' areas:

ZONE 3

Item	Event Description	Event Time minutes	Event Time per	Events per Shift	Total Non-productive Time	Total Productive Time
1	Basic Shift					10.00 hrs
	Less					
2	Food	30 mins	4 hours	1 nr	0.50 hrs	
3	Restroom Breaks	15 mins	Shift	1 nr	0.25 hrs	
4	Walking Time	7 mins	Regulated Break	2 nr	0.23 hrs	
5	Wash Time	15 mins	Shift	2 nr	0.50 hrs	
6	Non RP Change Time	15 mins	Shift	2 nr	0.50 hrs	
7	RP Change Time	15 mins	Shift	2 nr	0.50 hrs	
8	Tools and Elecrical Tools Check	15 mins	Shift (at start of shift)	1 nr	0.25 hrs	
9	TCR's and Blanket Hot Work Permits, DCN83057 Work Plan, FME F	15 mins	Shift (at start of shift)	1 nr	0.25 hrs	
10	Job Brief Specific Hazards and JSAP Prior to Start	30 mins	Shift (at start of shift)	1 nr	0.50 hrs	
11	Job Brief Secific Hazards and JSAP Post Complete	30 mins	Shift (at start of shift)	1 nr	0.50 hrs	
12	Houskeeping	30 mins	Shift (at end of shift)	1 nr	0.50 hrs	
13	Working In Rubber Area (What is Max REM? Assume 5 Mins Per Hr	5 mins	Hour	10 nr	0.83 hrs	
14	Constraints due to Night Shift	-	Shift (during shift)	1 nr	-	
15	Overtime Day and Saturday and Sunday	-	Shift (during shift)	1 nr	-	
16	Monitoring (Allow 5 events per shift @ 3mins)	3 mins	Shift (during shift)	5 nr	0.25 hrs	
	Total To Work Site				**5.57 hrs**	**4.43 hrs**
17	Congestion Trade (Multi Trade in Same Area)	-	Mid	1 nr	-	
18	Congestion Physical (Limited Space)	-	Mid	1 nr	-	
19	Learning Curve	9 mins	Mid	1 nr	0.15 hrs	
	Total At Work Site				**0.15 hrs**	**-0.15 hrs**
	Total Productive Time					**4.28 hrs**
					Productivity	43%
					Factor Multiplier	**2.33**

12 Appendix F – Crew Rates

DNGS Heavy Water Management Building - Crew Rates

(single 10 hour shifts, 5 days per week)

Crew	Rate	Rate (inc. Profit)
Groundworks	$ 53.22	$ 58.54
Fencing	$ 61.13	$ 67.24
Concrete	$ 56.49	$ 62.13
External Lighting	$ 58.53	$ 64.38
Roadworks Crew	$ 53.22	$ 58.54
Plumbers	$ 60.43	$ 66.47
Electrical Workers	$ 62.03	$ 68.23
Pipefitters	$ 62.83	$ 69.11
Building Works	$ 54.94	$ 60.43
Structural Steelwork	$ 61.13	$ 67.24
Roofers	$ 53.07	$ 58.38
Cladding	$ 61.47	$ 67.62
Masonry	$ 55.90	$ 61.49
Flooring	$ 57.83	$ 63.61

Crew Build-ups

Groundworks	Rate	%	Total
Laborer	$ 53.22	100%	$ 53.22
			$ -
		Crew rate	**$ 53.22**

Fencing	Rate	%	Total
Ironworker	$ 61.13	100%	$ 61.13
			$ -
		Crew rate	**$ 61.13**

Concrete	Rate	%	Total
Rodmen	$ 61.03	30%	$ 18.31
Carpenters	$ 57.83	20%	$ 11.57
Laborer	$ 53.22	50%	$ 26.61
			$ -
		Crew rate	**$ 56.49**

External Lighting	Rate	%	Total
Electrical worker	$ 62.03	25%	$ 15.51
Laborer	$ 53.22	25%	$ 13.31
Carpenters	$ 57.83	25%	$ 14.46
Rodmen	$ 61.03	25%	$ 15.26
			$ -
		Crew rate	**$ 58.53**

Roadworks Crew	Rate	%	Total
Laborer	$ 53.22	100%	$ 53.22
			$ -
		Crew rate	**$ 53.22**

Plumbers	Rate	%	Total
Laborer	$ 53.22	25%	$ 13.31
Plumbers and pipefitters	$ 62.83	75%	$ 47.12
			$ -
		Crew rate	**$ 60.43**

Electrical Workers	Rate	%	Total
Electrical worker	$ 62.03	100%	$ 62.03
			$ -
		Crew rate	**$ 62.03**

Pipefitters	Rate	%	Total
Plumbers and pipefitters	$ 62.83	100%	$ 62.83
			$ -
		Crew rate	**$ 62.83**

Building Works	Rate	%	Total
Laborer	$ 53.22	60%	$ 31.93
Carpenters	$ 57.83	30%	$ 17.35
Painters	$ 56.56	10%	$ 5.66
			$ -
		Crew rate	**$ 54.94**

Structural Steelwork	Rate	%	Total
Ironworker	$ 61.13	100%	$ 61.13
			$ -
		Crew rate	**$ 61.13**

Roofers	Rate	%	Total
Roofers	$ 53.07	100%	$ 53.07
			$ -
		Crew rate	**$ 53.07**

Cladding	Rate	%	Total
Sheet metal works	$ 61.47	100%	$ 61.47
			$ -
		Crew rate	**$ 61.47**

Masonry	Rate	%	Total
Cement mason	$ 55.90	100%	$ 55.90
			$ -
		Crew rate	**$ 55.90**

Flooring	Rate	%	Total
Carpenters	$ 57.83	100%	$ 57.83
			$ -
		Crew rate	**$ 57.83**

	$ 27.68	$ 41.52	$ 55.36
- See note (2)	$ 1.11	$ 1.66	$ 2.21
- See note (3)	$ 1.66	$ 2.49	$ 3.32
- See note (4)	$ 2.74	$ 4.11	$ 5.48
- See note (4)	$ 5.83	$ 8.75	$ 11.66
See note (4), (5) & (6)	$ 0.96	$ 1.44	$ 1.92
	$ 0.03	$ 0.03	$ 0.03
- See note (5)	$ 0.15	$ 0.15	$ 0.15
- See note (7)	$ 1.75	$ -	$ -
- See note (8)	$ 0.87	$ -	$ -
See note (9)	$ 0.59	$ 0.89	$ 1.19
- See note (	$ 4.15	$ -	$ -
- See note (1	$ -	$ -	$ -
- See note (12)	$ -	$ -	$ -

Hourly Rate Calculation: 10 Hrs / Shift, 1 Shift (Appendix A, 5 day Coverage)

Description	Gross Hour Working Time	Carpenter - 100% (Effective Date: 01 May 2012 to 30 April 2013)				Net Hours	Total Cost
		Foreman	Subforeman	Journeyman	Apprentice (3rd year)		
		Carpenter	Carpenter	Carpenter	Carpenter		
No. of workers		6	36	216	54		
Percentage		100%	100%	100%	100%		
First Shift							
Regular Hours Mon. to Fri.	40	240	1440	8640	2160		
Lunch Time	2.5	15.0	90.0	540.0	135.0		
Workhours Mon. to Fri.	**37.5**	**225.0**	**1,350.0**	**8,100.0**	**2,025.0**	**11,700**	
Plain rate		$59.20	$57.52	$55.28	$47.52		
		$13,321	**$77,655**	**$447,760**	**$96,225**		**$634,961**
Overtime (Mon - Fri)							
Regular Hours Mon. to Fri.	10	60	360	2160	540	**3120**	
Overtime Rate (x1.5) Rate		$78.57	$76.04	$72.68	$61.04		
		$4,714	**$27,375**	**$156,985**	**$32,960**		**$222,035**
TOTAL	**50**					**14,820**	**$856,996**
Labour Rate - EPSCA (10 hrs per shift x 1 shifts per day x 5 days per week) - $/hr							**$57.83**

Mon-Fri (First Shift): Regular scheduled hours of work of up to 10 hours per shift
Mon-Fri (Second Shift): Regular scheduled hours of work of up to 10 hours per shift plus a shift differential of 1/5 of the straight time hourlt rate
Mon-Fri (Third Shift): Regular scheduled hours of work of up to 10 hours per shift plus a shift differential of 1/5 of the straight time hourlt rate
Sat: 2 times for all hours worked.
Sun & Hol: 2 times for all hours worked.
Overtime: first two hours of overtime worked as an extension to the regularly scheduled hours of work (Mon-Fri) shall be paid 1-1/2 times the base hourly rate.

	$ 38.10	$ 57.15	$ 76.20
- See note (2)	$ 1.52	$ 2.29	$ 3.05
- See note (3)	$ 2.29	$ 3.43	$ 4.57
- See note (4)	$ 2.74	$ 4.11	$ 5.48
- See note (4)	$ 5.83	$ 8.75	$ 11.66
See note (4), (5) & (6)	$ 0.96	$ 1.44	$ 1.92
	$ 0.03	$ 0.03	$ 0.03
- See note (5)	$ 0.15	$ 0.15	$ 0.15
- See note (7)	$ 1.75	$ -	$ -
- See note (8)	$ 0.87	$ -	$ -
See note (9)	$ 0.82	$ 1.23	$ 1.63
- See note (	$ 4.15	$ -	$ -
- See note (1	$ -	$ -	$ -
- See note (12)	$ -	$ -	$ -

Carpenter EPSCA Wage Schedule - APPENDIX "A" (5 DAY COVERAGE)

Description	Carpenter - ourneyman		
	Plain Time	Overtime	Doubletime
Base Hourly rate from 01 May 2012 TO 30 April 2013	$ 34.60	$ 51.90	$ 69.20
Vacation Pay - See note (2)	$ 1.38	$ 2.08	$ 2.77
Holiday Pay - See note (3)	$ 2.08	$ 3.11	$ 4.15
Welfare $2.74 - See note (4)	$ 2.74	$ 4.11	$ 5.48
Pension $5.83 - See note (4)	$ 5.83	$ 8.75	$ 11.66
Union Funds $0.96 - See note (4), (5) & (6)	$ 0.96	$ 1.44	$ 1.92
Total Wage Package	**$ 47.59**	**$ 71.39**	**$ 95.18**
Admin Traning Fund	$ 0.03	$ 0.03	$ 0.03
EPSCA Association Funds $0.15 - See note (5)	$ 0.15	$ 0.15	$ 0.15
CPP - See note (7)	$ 1.75	$ -	$ -
EI - See note (8)	$ 0.87	$ -	$ -
Employer Health Tax (EHT) - See note (9)	$ 0.74	$ 1.11	$ 1.48
Workplace Safety Insurance Board (WSIB) - See note (	$ 4.15	$ -	$ -
Union Dues or/and Union Administration - See note (1	$ -	$ -	$ -
Shift Differential Payment - See note (12)	$ -	$ -	$ -
Total Rate Chargeable	**$ 55.28**	**$ 72.68**	**$ 96.84**

ement Mason EPSCA Wage Schedule - APPENDIX "A" (5 DAY COVERAGI

Description	Cement Mason - ourneyman		
	Plain Time	Overtime	Doubletime
Base Hourly rate from 01 May 2012 TO 30 April 2013	$ 35.30	$ 52.95	$ 70.60
Vacation Pay - See note (2)	$ 1.41	$ 2.12	$ 2.82
Holiday Pay - See note (3)	$ 2.12	$ 3.18	$ 4.24
Welfare - See note (4) included below	$ -	$ -	$ -
Pension - See note (4) included below	$ -	$ -	$ -
Union Funds $6.45 - See note (4), (5) & (6) welfare, pension, training, organizer fund	$ 6.45	$ 9.68	$ 12.90
Total Wage Package	**$ 45.28**	**$ 67.92**	**$ 90.56**
EPSCA Association Funds $0.15 - See note (5)	$ 0.15	$ 0.15	$ 0.15
CPP - See note (7)	$ 1.75	$ -	$ -
EI - See note (8)	$ 0.87	$ -	$ -
Employer Health Tax (EHT) - See note (9)	$ 0.76	$ 1.14	$ 1.51
Workplace Safety Insurance Board (WSIB) - See note (	$ 4.15	$ -	$ -
Union Dues or/and Union Administration - See note (1	$ -	$ -	$ -
Shift Differential Payment - See note (12)	$ -	$ -	$ -
Total Rate Chargeable	**$ 52.95**	**$ 69.21**	**$ 92.22**

Ironworker EPSCA Wage Schedule - APPENDIX "A" (5 DAY COVERAGE)

Description	Ironworker - ourneyman		
	Plain Time	Overtime	Doubletime
Base Hourly rate from 01 May 2012 TO 30 April 2013	$ 37.13	$ 55.70	$ 74.26
Vacation Pay - See note (2)	$ 2.23	$ 3.34	$ 4.46
Holiday Pay - See note (3)	$ 1.49	$ 2.23	$ 2.97
Welfare $3.19 - See note (4)	$ 3.19	$ 4.79	$ 6.38
Pension $6.34 - See note (4)	$ 6.34	$ 9.51	$ 12.68
Union Funds $0.55 - See note (4), (5) & (6)	$ 0.55	$ 0.83	$ 1.10
Total Wage Package	**$ 50.92**	**$ 76.38**	**$ 101.85**
EPSCA Association Funds $0.15 - See note (5)	$ 0.15	$ 0.15	$ 0.15
CPP - See note (7)	$ 1.75	$ -	$ -
EI - See note (8)	$ 0.87	$ -	$ -
Employer Health Tax (EHT) - See note (9)	$ 0.80	$ 1.19	$ 1.59
Workplace Safety Insurance Board (WSIB) - See note (	$ 4.15	$ -	$ -
Union Dues or/and Union Administration - See note (1	$ -	$ -	$ -
Shift Differential Payment - See note (12)	$ -	$ -	$ -
Total Rate Chargeable	**$ 58.64**	**$ 77.73**	**$ 103.59**

	$ 39.63	$ 59.45	$ 79.26
- See note (2)	$ 2.38	$ 3.57	$ 4.76
- See note (3)	$ 1.59	$ 2.38	$ 3.17
- See note (4)	$ 3.19	$ 4.79	$ 6.38
- See note (4)	$ 6.34	$ 9.51	$ 12.68
See note (4), (5) & (6)	$ 0.55	$ 0.83	$ 1.10
- See note (5)	$ 0.15	$ 0.15	$ 0.15
- See note (7)	$ 1.75	$ -	$ -
- See note (8)	$ 0.87	$ -	$ -
See note (9)	$ 0.85	$ 1.28	$ 1.70
- See note (	$ 4.15	$ -	$ -
- See note (1	$ -	$ -	$ -
- See note (12)	$ -	$ -	$ -

Labourer EPSCA Wage Schedule - APPENDIX "A" (5 DAY COVERAGE)

Description	Labourer - Apprentice (3rd year)		
	Plain Time	Overtime	Doubletime
Base Hourly rate from 01 May 2012 TO 30 April 2013	$ 32.14	$ 48.21	$ 64.28
Vacation Pay - See note (2)	$ 1.29	$ 1.93	$ 2.57
Holiday Pay - See note (3)	$ 1.93	$ 2.89	$ 3.86
Welfare $2.40 - See note (4)	$ 2.40	$ 3.60	$ 4.80
Pension $5.58 - See note (4)	$ 5.58	$ 8.37	$ 11.16
Union Funds $0.50 - See note (4), (5) & (6)	$ 0.50	$ 0.75	$ 1.00
Total Wage Package	**$ 43.83**	**$ 65.75**	**$ 87.67**
EPSCA Association Funds $0.15 - See note (5)	$ 0.15	$ 0.15	$ 0.15
CPP - See note (7)	$ 1.75	$ -	$ -
EI - See note (8)	$ 0.87	$ -	$ -
Employer Health Tax (EHT) - See note (9)	$ 0.69	$ 1.03	$ 1.38
Workplace Safety Insurance Board (WSIB) - See note (	$ 4.15	$ -	$ -
Union Dues or/and Union Administration - See note (1	$ -	$ -	$ -
Shift Differential Payment - See note (12)	$ -	$ -	$ -
Total Rate Chargeable	**$ 51.44**	**$ 66.94**	**$ 89.20**

Hourly Rate Calculation: 10 Hrs / Shift, 1 Shift (Appendix A, 5 day Coverage)

Description	Gross Hour Working Time	Laborer- 100% (Effective Date: 01 May 2012 to 30 April 2013)				Net Hours	Total Cost
		Foreman	Subforeman	Journeyman	Apprentice (3rd year)		
		Laborer	Laborer	Laborer	Laborer		
First Shift							
Lunch Time							
Workhours Mon. to Fri.	37.5	225.0	1,350.0	8,100.0	2,025.0	11,700	
		$52.84		$49.48	$51.44		
		$11,889	$69,444	$400,770	$104,167		$586,270
Overtime (Mon - Fri)							
						3120	
		$69.04	$66.94	$63.99	$66.94		
		$4,142	$24,097	$138,221	$36,145		$202,605
TOTAL	50					14,820	$788,875
Labour Rate - EPSCA (10 hrs per shift x 1 shifts per day x 5 days per week) - $/hr							$53.23

Mon-Fri (First Shift): Regular scheduled hours of work of up to 10 hours per shift
Mon-Fri (Second Shift): Regular scheduled hours of work of up to 10 hours per shift plus a shift differential of 1/5 of the straight time hourlt rate
Mon-Fri (Third Shift): Regular scheduled hours of work of up to 10 hours per shift plus a shift differential of 1/5 of the straight time hourlt rate
Sat: 2 times for all hours worked.
Sun & Hol: 2 times for all hours worked.
Overtime: first two hours of overtime worked as an extension to the regularly scheduled hours of work (Mon-Fri) shall be paid 1-1/2 times the base hourly rate.

Labourer EPSCA Wage Schedule - APPENDIX "A" (5 DAY COVERAGE)

Description	Labourer - Foreman		
	Plain Time	Overtime	Doubletime
Base Hourly rate from 01 May 2012 TO 30 April 2013	$ 33.39	$ 50.09	$ 66.78
Vacation Pay - See note (2)	$ 1.34	$ 2.00	$ 2.67
Holiday Pay - See note (3)	$ 2.00	$ 3.01	$ 4.01
Welfare $2.40 - See note (4)	$ 2.40	$ 3.60	$ 4.80
Pension $5.58 - See note (4)	$ 5.58	$ 8.37	$ 11.16
Union Funds $0.50 - See note (4), (5) & (6)	$ 0.50	$ 0.75	$ 1.00
Total Wage Package	**$ 45.21**	**$ 67.81**	**$ 90.42**
EPSCA Association Funds $0.15 - See note (5)	$ 0.15	$ 0.15	$ 0.15
CPP - See note (7)	$ 1.75	$ -	$ -
EI - See note (8)	$ 0.87	$ -	$ -
Employer Health Tax (EHT) - See note (9)	$ 0.72	$ 1.07	$ 1.43
Workplace Safety Insurance Board (WSIB) - See note (	$ 4.15	$ -	$ -
Union Dues or/and Union Administration - See note (1	$ -	$ -	$ -
Shift Differential Payment - See note (12)	$ -	$ -	$ -
Total Rate Chargeable	**$ 52.84**	**$ 69.04**	**$ 92.00**

Labourer EPSCA Wage Schedule - APPENDIX "A" (5 DAY COVERAGE)

Description	Labourer - Journeyman		
	Plain Time	Overtime	Doubletime
Base Hourly rate from 01 May 2012 TO 30 April 2013	$ 30.39	$ 45.59	$ 60.78
Vacation Pay - See note (2)	$ 1.22	$ 1.82	$ 2.43
Holiday Pay - See note (3)	$ 1.82	$ 2.74	$ 3.65
Welfare $2.40 - See note (4)	$ 2.40	$ 3.60	$ 4.80
Pension $5.58 - See note (4)	$ 5.58	$ 8.37	$ 11.16
Union Funds $0.50 - See note (4), (5) & (6)	$ 0.50	$ 0.75	$ 1.00
Total Wage Package	**$ 41.91**	**$ 62.86**	**$ 83.82**
EPSCA Association Funds $0.15 - See note (5)	$ 0.15	$ 0.15	$ 0.15
CPP - See note (7)	$ 1.75	$ -	$ -
EI - See note (8)	$ 0.87	$ -	$ -
Employer Health Tax (EHT) - See note (9)	$ 0.65	$ 0.98	$ 1.30
Workplace Safety Insurance Board (WSIB) - See note (	$ 4.15	$ -	$ -
Union Dues or/and Union Administration - See note (1	$ -	$ -	$ -
Shift Differential Payment - See note (12)	$ -	$ -	$ -
Total Rate Chargeable	**$ 49.48**	**$ 63.99**	**$ 85.27**

Labourer EPSCA Wage Schedule - APPENDIX "A" (5 DAY COVERAGE)

Description	Labourer - Subforeman		
	Plain Time	Overtime	Doubletime
Base Hourly rate from 01 May 2012 TO 30 April 2013	$ 32.14	$ 48.21	$ 64.28
Vacation Pay - See note (2)	$ 1.29	$ 1.93	$ 2.57
Holiday Pay - See note (3)	$ 1.93	$ 2.89	$ 3.86
Welfare $2.40 - See note (4)	$ 2.40	$ 3.60	$ 4.80
Pension $5.58 - See note (4)	$ 5.58	$ 8.37	$ 11.16
Union Funds $0.50 - See note (4), (5) & (6)	$ 0.50	$ 0.75	$ 1.00
Total Wage Package	**$ 43.83**	**$ 65.75**	**$ 87.67**
EPSCA Association Funds $0.15 - See note (5)	$ 0.15	$ 0.15	$ 0.15
CPP - See note (7)	$ 1.75	$ -	$ -
EI - See note (8)	$ 0.87	$ -	$ -
Employer Health Tax (EHT) - See note (9)	$ 0.69	$ 1.03	$ 1.38
Workplace Safety Insurance Board (WSIB) - See note (	$ 4.15	$ -	$ -
Union Dues or/and Union Administration - See note (1	$ -	$ -	$ -
Shift Differential Payment - See note (12)	$ -	$ -	$ -
Total Rate Chargeable	**$ 51.44**	**$ 66.94**	**$ 89.20**

Painters EPSCA Wage Schedule - APPENDIX "A" (5 DAY COVERAGE)

Description	Painters - Foreman		
	Plain Time	Overtime	Doubletime
Base Hourly rate from 01 May 2012 TO 30 April 2013	$ 37.43	$ 56.15	$ 74.86
Vacation Pay - See note (2)	$ 1.50	$ 2.25	$ 2.99
Holiday Pay - See note (3)	$ 2.25	$ 3.37	$ 4.49
Welfare $2.30 - See note (4)	$ 2.30	$ 3.45	$ 4.60
Pension $5.25 - See note (4)	$ 5.25	$ 7.88	$ 10.50
Union Funds $1.15 - See note (4), (5) & (6)	$ 1.15	$ 1.73	$ 2.30
Total Wage Package	**$ 49.87**	**$ 74.81**	**$ 99.75**
EPSCA Association Funds $0.15 - See note (5)	$ 0.15	$ 0.15	$ 0.15
CPP - See note (7)	$ 1.75	$ -	$ -
EI - See note (8)	$ 0.87	$ -	$ -
Employer Health Tax (EHT) - See note (9)	$ 0.80	$ 1.20	$ 1.61
Workplace Safety Insurance Board (WSIB) - See note (	$ 4.15	$ -	$ -
Union Dues or/and Union Administration - See note (1	$ -	$ -	$ -
Shift Differential Payment - See note (12)	$ -	$ -	$ -
Total Rate Chargeable	**$ 57.59**	**$ 76.16**	**$ 101.50**

Painters EPSCA Wage Schedule - APPENDIX "A" (5 DAY COVERAGE)

Description	Ironworker - Apprentice 3Y		
	Plain Time	Overtime	Doubletime
Base Hourly rate from 01 May 2012 TO 30 April 2013	$ 27.54	$ 41.31	$ 55.08
Vacation Pay - See note (2)	$ 1.10	$ 1.65	$ 2.20
Holiday Pay - See note (3)	$ 1.65	$ 2.48	$ 3.30
Welfare $2.30 - See note (4)	$ 2.30	$ 3.45	$ 4.60
Pension $5.25 - See note (4)	$ 5.25	$ 7.88	$ 10.50
Union Funds $1.15 - See note (4), (5) & (6)	$ 1.15	$ 1.73	$ 2.30
Total Wage Package	**$ 38.99**	**$ 58.49**	**$ 77.99**
EPSCA Association Funds $0.15 - See note (5)	$ 0.15	$ 0.15	$ 0.15
CPP - See note (7)	$ 1.75	$ -	$ -
EI - See note (8)	$ 0.87	$ -	$ -
Employer Health Tax (EHT) - See note (9)	$ 0.59	$ 0.89	$ 1.18
Workplace Safety Insurance Board (WSIB) - See note (	$ 4.15	$ -	$ -
Union Dues or/and Union Administration - See note (1	$ -	$ -	$ -
Shift Differential Payment - See note (12)	$ -	$ -	$ -
Total Rate Chargeable	**$ 46.50**	**$ 59.53**	**$ 79.32**

Hourly Rate Calculation: 10 Hrs / Shift, 1 Shift (Appendix A, 5 day Coverage)

Description	Gross Hour Working Time	Painters- 100% (Effective Date: 01 May 2012 to 30 April 2013)				Net Hours	Total Cost
		Foreman	Subforeman	Journeyman	Apprentice (3rd year)		
		Painters	Painters	Painters	Painters		
First Shift							
Lunch Time							
Workhours Mon. to Fri.	37.5	225.0	1,350.0	8,100.0	2,025.0	11,700	
		$57.59		$54.23	$46.50		
		$12,958	$75,101	$439,250	$94,166		$621,475
Overtime (Mon - Fri)							
						3120	
		$76.16	$73.22	$71.12	$59.53		
		$4,570	$26,359	$153,613	$32,145		$216,687
TOTAL	50					14,820	$838,162
Labour Rate - EPSCA (10 hrs per shift x 1 shifts per day x 5 days per week) - $/hr							$56.56

Mon-Fri (First Shift): Regular scheduled hours of work of up to 10 hours per shift
Mon-Fri (Second Shift): Regular scheduled hours of work of up to 10 hours per shift plus a shift differential of 1/5 of the straight time hourlt rate
Mon-Fri (Third Shift): Regular scheduled hours of work of up to 10 hours per shift plus a shift differential of 1/5 of the straight time hourlt rate
Sat: 2 times for all hours worked.
Sun & Hol: 2 times for all hours worked.
Overtime: first two hours of overtime worked as an extension to the regularly scheduled hours of work (Mon-Fri) shall be paid 1-1/2 times the base hourly rate.

Painters EPSCA Wage Schedule - APPENDIX "A" (5 DAY COVERAGE)

Description	Ironworker - Journeyman		
	Plain Time	Overtime	Doubletime
Base Hourly rate from 01 May 2012 TO 30 April 2013	$ 34.43	$ 51.65	$ 68.86
Vacation Pay - See note (2)	$ 1.38	$ 2.07	$ 2.75
Holiday Pay - See note (3)	$ 2.07	$ 3.10	$ 4.13
Welfare $2.30 - See note (4)	$ 2.30	$ 3.45	$ 4.60
Pension $5.25 - See note (4)	$ 5.25	$ 7.88	$ 10.50
Union Funds $1.15 - See note (4), (5) & (6)	$ 1.15	$ 1.73	$ 2.30
Total Wage Package	**$ 46.57**	**$ 69.86**	**$ 93.15**
EPSCA Association Funds $0.15 - See note (5)	$ 0.15	$ 0.15	$ 0.15
CPP - See note (7)	$ 1.75	$ -	$ -
EI - See note (8)	$ 0.87	$ -	$ -
Employer Health Tax (EHT) - See note (9)	$ 0.74	$ 1.11	$ 1.48
Workplace Safety Insurance Board (WSIB) - See note (	$ 4.15	$ -	$ -
Union Dues or/and Union Administration - See note (1	$ -	$ -	$ -
Shift Differential Payment - See note (12)	$ -	$ -	$ -
Total Rate Chargeable	**$ 54.23**	**$ 71.12**	**$ 94.77**

Painters EPSCA Wage Schedule - APPENDIX "A" (5 DAY COVERAGE)

Description	Ironworker - Subforeman		
	Plain Time	Overtime	Doubletime
Base Hourly rate from 01 May 2012 TO 30 April 2013	$ 35.68	$ 53.52	$ 71.36
Vacation Pay - See note (2)	$ 1.43	$ 2.14	$ 2.85
Holiday Pay - See note (3)	$ 2.14	$ 3.21	$ 4.28
Welfare $2.30 - See note (4)	$ 2.30	$ 3.45	$ 4.60
Pension $5.25 - See note (4)	$ 5.25	$ 7.88	$ 10.50
Union Funds $1.15 - See note (4), (5) & (6)	$ 1.15	$ 1.73	$ 2.30
Total Wage Package	**$ 47.95**	**$ 71.92**	**$ 95.90**
EPSCA Association Funds $0.15 - See note (5)	$ 0.15	$ 0.15	$ 0.15
CPP - See note (7)	$ 1.75	$ -	$ -
EI - See note (8)	$ 0.87	$ -	$ -
Employer Health Tax (EHT) - See note (9)	$ 0.77	$ 1.15	$ 1.53
Workplace Safety Insurance Board (WSIB) - See note (	$ 4.15	$ -	$ -
Union Dues or/and Union Administration - See note (1	$ -	$ -	$ -
Shift Differential Payment - See note (12)	$ -	$ -	$ -
Total Rate Chargeable	**$ 55.63**	**$ 73.22**	**$ 97.58**

Plumbers/Pipefitters EPSCA Wage Schedule - APPENDIX "A" (5 DAY COVERAGE)

Description	Plumbers/Pipefitters - Apprentice 3Y		
	Plain Time	Overtime	Doubletime
Base Hourly rate from 01 May 2012 TO 30 April 2013	$ 25.29	$ 37.94	$ 50.58
Vacation Pay - See note (2)	$ 1.52	$ 2.28	$ 3.03
Holiday Pay - See note (3)	$ 1.01	$ 1.52	$ 2.02
Welfare $2.40 - See note (4)	$ 2.40	$ 3.60	$ 4.80
Pension $6.22 - See note (4)	$ 6.22	$ 9.33	$ 12.44
Union Funds $1.93 - See note (4), (5) & (6)	$ 1.93	$ 2.90	$ 3.86
Total Wage Package	**$ 38.37**	**$ 57.55**	**$ 76.74**
EPSCA Association Funds $0.15 - See note (5)	$ 0.15	$ 0.15	$ 0.15
CPP - See note (7)	$ 1.75	$ -	$ -
EI - See note (8)	$ 0.87	$ -	$ -
Employer Health Tax (EHT) - See note (9)	$ 0.54	$ 0.81	$ 1.08
Workplace Safety Insurance Board (WSIB) - See note (	$ 4.15	$ -	$ -
Union Dues or/and Union Administration - See note (1	$ -	$ -	$ -
Shift Differential Payment - See note (12)	$ -	$ -	$ -
Total Rate Chargeable	**$ 45.83**	**$ 58.52**	**$ 77.97**

Hourly Rate Calculation: 10 Hrs / Shift, 1 Shift (Appendix A, 5 day Coverage)

Description	Gross Hour Working Time	Plumbers/Pipefitters- 100% (Effective Date: 01 May 2012 to 30 April 2013)				Net Hours	Total Cost
		Foreman	Subforeman	Journeyman	Apprentice (3rd year)		
		Plumbers/Pipefitters	Plumbers/Pipefitters	Plumbers/Pipefitters	Plumbers/Pipefitters		
First Shift							
Lunch Time							
Workhours Mon. to Fri.	37.5	225.0	1,350.0	8,100.0	2,025.0	11,700	
		$65.46		$61.10	$45.83		
		$14,730	$85,441	$494,930	$92,802		$687,903
Overtime (Mon - Fri)							
						3120	
		$87.97	$84.71	$81.43	$58.52		
		$5,278	$30,495	$175,885	$31,599		$243,258
TOTAL	50					14,820	$931,161
Labour Rate - EPSCA (10 hrs per shift x 1 shifts per day x 5 days per week) - $/hr							$62.83

Mon-Fri (First Shift): Regular scheduled hours of work of up to 10 hours per shift
Mon-Fri (Second Shift): Regular scheduled hours of work of up to 10 hours per shift plus a shift differential of 1/5 of the straight time hourlt rate
Mon-Fri (Third Shift): Regular scheduled hours of work of up to 10 hours per shift plus a shift differential of 1/5 of the straight time hourlt rate
Sat: 2 times for all hours worked.
Sun & Hol: 2 times for all hours worked.
Overtime: first two hours of overtime worked as an extension to the regularly scheduled hours of work (Mon-Fri) shall be paid 1-1/2 times the base hourly rate.

Plumbers/Pipefitters EPSCA Wage Schedule - APPENDIX "A" (5 DAY COVERAGE)

Description	Plumbers/Pipefitters - Foreman		
	Plain Time	Overtime	Doubletime
Base Hourly rate from 01 May 2012 TO 30 April 2013	$ 42.80	$ 64.20	$ 85.60
Vacation Pay - See note (2)	$ 2.57	$ 3.85	$ 5.14
Holiday Pay - See note (3)	$ 1.71	$ 2.57	$ 3.42
Welfare $2.40 - See note (4)	$ 2.40	$ 3.60	$ 4.80
Pension $6.22 - See note (4)	$ 6.22	$ 9.33	$ 12.44
Union Funds $1.93 - See note (4), (5) & (6)	$ 1.93	$ 2.90	$ 3.86
Total Wage Package	**$ 57.63**	**$ 86.45**	**$ 115.26**
EPSCA Association Funds $0.15 - See note (5)	$ 0.15	$ 0.15	$ 0.15
CPP - See note (7)	$ 1.75	$ -	$ -
EI - See note (8)	$ 0.87	$ -	$ -
Employer Health Tax (EHT) - See note (9)	$ 0.92	$ 1.38	$ 1.84
Workplace Safety Insurance Board (WSIB) - See note (	$ 4.15	$ -	$ -
Union Dues or/and Union Administration - See note (1	$ -	$ -	$ -
Shift Differential Payment - See note (12)	$ -	$ -	$ -
Total Rate Chargeable	**$ 65.46**	**$ 87.97**	**$ 117.25**

Plumbers/Pipefitters EPSCA Wage Schedule - APPENDIX "A" (5 DAY COVERAGE)

Description	Plumbers/Pipefitters - Journeyman		
	Plain Time	Overtime	Doubletime
Base Hourly rate from 01 May 2012 TO 30 April 2013	$ 38.91	$ 58.37	$ 77.82
Vacation Pay - See note (2)	$ 2.33	$ 3.50	$ 4.67
Holiday Pay - See note (3)	$ 1.56	$ 2.33	$ 3.11
Welfare $2.40 - See note (4)	$ 2.40	$ 3.60	$ 4.80
Pension $6.22 - See note (4)	$ 6.22	$ 9.33	$ 12.44
Union Funds $1.93 - See note (4), (5) & (6)	$ 1.93	$ 2.90	$ 3.86
Total Wage Package	**$ 53.35**	**$ 80.03**	**$ 106.70**
EPSCA Association Funds $0.15 - See note (5)	$ 0.15	$ 0.15	$ 0.15
CPP - See note (7)	$ 1.75	$ -	$ -
EI - See note (8)	$ 0.87	$ -	$ -
Employer Health Tax (EHT) - See note (9)	$ 0.83	$ 1.25	$ 1.67
Workplace Safety Insurance Board (WSIB) - See note (	$ 4.15	$ -	$ -
Union Dues or/and Union Administration - See note (1	$ -	$ -	$ -
Shift Differential Payment - See note (12)	$ -	$ -	$ -
Total Rate Chargeable	**$ 61.10**	**$ 81.43**	**$ 108.52**

Plumbers/Pipefitters EPSCA Wage Schedule - APPENDIX "A" (5 DAY COVERAGE)

Description	Plumbers/Pipefitters - SubForeman		
	Plain Time	Overtime	Doubletime
Base Hourly rate from 01 May 2012 TO 30 April 2013	$ 40.86	$ 61.29	$ 81.72
Vacation Pay - See note (2)	$ 2.45	$ 3.68	$ 4.90
Holiday Pay - See note (3)	$ 1.63	$ 2.45	$ 3.27
Welfare $2.40 - See note (4)	$ 2.40	$ 3.60	$ 4.80
Pension $6.22 - See note (4)	$ 6.22	$ 9.33	$ 12.44
Union Funds $1.93 - See note (4), (5) & (6)	$ 1.93	$ 2.90	$ 3.86
Total Wage Package	**$ 55.50**	**$ 83.24**	**$ 110.99**
EPSCA Association Funds $0.15 - See note (5)	$ 0.15	$ 0.15	$ 0.15
CPP - See note (7)	$ 1.75	$ -	$ -
EI - See note (8)	$ 0.87	$ -	$ -
Employer Health Tax (EHT) - See note (9)	$ 0.88	$ 1.31	$ 1.75
Workplace Safety Insurance Board (WSIB) - See note (	$ 4.15	$ -	$ -
Union Dues or/and Union Administration - See note (1	$ -	$ -	$ -
Shift Differential Payment - See note (12)	$ -	$ -	$ -
Total Rate Chargeable	**$ 63.29**	**$ 84.71**	**$ 112.89**

Rodmen EPSCA Wage Schedule - APPENDIX "A" (5 DAY COVERAGE)

Description	Rodmen - Apprentice 3Y		
	Plain Time	Overtime	Doubletime
Base Hourly rate from 01 May 2012 TO 30 April 2013	$ 32.68	$ 49.02	$ 65.36
Vacation Pay - See note (2)	$ 1.96	$ 2.94	$ 3.92
Holiday Pay - See note (3)	$ 1.31	$ 1.96	$ 2.61
Welfare $2.95 - See note (4)	$ 2.95	$ 4.43	$ 5.90
Pension $6.27 - See note (4)	$ 6.27	$ 9.41	$ 12.54
Union Funds $0.54 - See note (4), (5) & (6)	$ 0.54	$ 0.81	$ 1.08
Total Wage Package	**$ 45.71**	**$ 68.56**	**$ 91.42**
EPSCA Association Funds $0.15 - See note (5)	$ 0.15	$ 0.15	$ 0.15
CPP - See note (7)	$ 1.75	$ -	$ -
EI - See note (8)	$ 0.87	$ -	$ -
Employer Health Tax (EHT) - See note (9)	$ 0.70	$ 1.05	$ 1.40
Workplace Safety Insurance Board (WSIB) - See note (	$ 4.15	$ -	$ -
Union Dues or/and Union Administration - See note (1	$ -	$ -	$ -
Shift Differential Payment - See note (12)	$ -	$ -	$ -
Total Rate Chargeable	**$ 53.33**	**$ 69.76**	**$ 92.97**

Hourly Rate Calculation: 10 Hrs / Shift, 1 Shift (Appendix A, 5 day Coverage)

Description	Gross Hour Working Time	Rodmen - 100% (Effective Date: 01 May 2012 to 30 April 2013)				Net Hours	Total Cost
		Foreman	Subforeman	Journeyman	rentice (3rd y		
		Rodmen	Rodmen	Rodmen	Rodmen		
No. of workers		6	36	216	54		
Percentage		100%	100%	100%	100%		
First Shift							
Regular Hours Mon. to Fri.	40	240	1440	8640	2160		
Lunch Time	2.5	15.0	90.0	540.0	135.0		
Workhours Mon. to Fri.	**37.5**	**225.0**	**1,350.0**	**8,100.0**	**2,025.0**	**11,700**	
Plain rate		$61.60	$60.76	$57.40	$53.33		
		$13,860	$82,027	$464,914	$107,985		$668,786
Overtime (Mon - Fri)							
Regular Hours Mon. to Fri.	10	60	360	2160	540	**3120**	
Overtime Rate (x1.5) Rate		$82.18	$80.92	$75.87	$69.76		
		$4,931	$29,130	$163,879	$37,672		$235,612
TOTAL	**50**					**14,820**	$904,398
Labour Rate - EPSCA (10 hrs per shift x 1 shifts per day x 5 days per week) - $/hr							**$61.03**

Mon-Fri (First Shift): Regular scheduled hours of work of up to 10 hours per shift
Mon-Fri (Second Shift): Regular scheduled hours of work of up to 10 hours per shift plus a shift differential of 1/5 of the straight time hourlt rate
Mon-Fri (Third Shift): Regular scheduled hours of work of up to 10 hours per shift plus a shift differential of 1/5 of the straight time hourlt rate
Sat: 2 times for all hours worked.
Sun & Hol: 2 times for all hours worked.
Overtime: first two hours of overtime worked as an extension to the regularly scheduled hours of work (Mon-Fri) shall be paid 1-1/2 times the base hourly rate.

Rodmen EPSCA Wage Schedule - APPENDIX "A" (5 DAY COVERAGE)

Description	Rodmen - Foreman		
	Plain Time	Overtime	Doubletime
Base Hourly rate from 01 May 2012 TO 30 April 2013	$ 40.06	$ 60.09	$ 80.12
Vacation Pay - See note (2)	$ 2.40	$ 3.61	$ 4.81
Holiday Pay - See note (3)	$ 1.60	$ 2.40	$ 3.20
Welfare $2.95 - See note (4)	$ 2.95	$ 4.43	$ 5.90
Pension $6.27 - See note (4)	$ 6.27	$ 9.41	$ 12.54
Union Funds $0.54 - See note (4), (5) & (6)	$ 0.54	$ 0.81	$ 1.08
Total Wage Package	**$ 53.83**	**$ 80.74**	**$ 107.65**
EPSCA Association Funds $0.15 - See note (5)	$ 0.15	$ 0.15	$ 0.15
CPP - See note (7)	$ 1.75	$ -	$ -
EI - See note (8)	$ 0.87	$ -	$ -
Employer Health Tax (EHT) - See note (9)	$ 0.86	$ 1.29	$ 1.72
Workplace Safety Insurance Board (WSIB) - See note (	$ 4.15	$ -	$ -
Union Dues or/and Union Administration - See note (1	$ -	$ -	$ -
Shift Differential Payment - See note (12)	$ -	$ -	$ -
Total Rate Chargeable	**$ 61.60**	**$ 82.18**	**$ 109.52**

Rodmen EPSCA Wage Schedule - APPENDIX "A" (5 DAY COVERAGE)

Description	Rodmen - Journeyman		
	Plain Time	Overtime	Doubletime
Base Hourly rate from 01 May 2012 TO 30 April 2013	$ 36.31	$ 54.47	$ 72.62
Vacation Pay - See note (2)	$ 2.18	$ 3.27	$ 4.36
Holiday Pay - See note (3)	$ 1.45	$ 2.18	$ 2.90
Welfare $2.95 - See note (4)	$ 2.95	$ 4.43	$ 5.90
Pension $6.27 - See note (4)	$ 6.27	$ 9.41	$ 12.54
Union Funds $0.54 - See note (4), (5) & (6)	$ 0.54	$ 0.81	$ 1.08
Total Wage Package	**$ 49.70**	**$ 74.55**	**$ 99.40**
EPSCA Association Funds $0.15 - See note (5)	$ 0.15	$ 0.15	$ 0.15
CPP - See note (7)	$ 1.75	$ -	$ -
EI - See note (8)	$ 0.87	$ -	$ -
Employer Health Tax (EHT) - See note (9)	$ 0.78	$ 1.17	$ 1.56
Workplace Safety Insurance Board (WSIB) - See note (	$ 4.15	$ -	$ -
Union Dues or/and Union Administration - See note (1	$ -	$ -	$ -
Shift Differential Payment - See note (12)	$ -	$ -	$ -
Total Rate Chargeable	**$ 57.40**	**$ 75.87**	**$ 101.11**

Rodmen EPSCA Wage Schedule - APPENDIX "A" (5 DAY COVERAGE)

Description	Rodmen - Subforeman		
	Plain Time	Overtime	Doubletime
Base Hourly rate from 01 May 2012 TO 30 April 2013	$ 39.31	$ 58.97	$ 78.62
Vacation Pay - See note (2)	$ 2.36	$ 3.54	$ 4.72
Holiday Pay - See note (3)	$ 1.57	$ 2.36	$ 3.14
Welfare $2.95 - See note (4)	$ 2.95	$ 4.43	$ 5.90
Pension $6.27 - See note (4)	$ 6.27	$ 9.41	$ 12.54
Union Funds $0.54 - See note (4), (5) & (6)	$ 0.54	$ 0.81	$ 1.08
Total Wage Package	**$ 53.00**	**$ 79.50**	**$ 106.00**
EPSCA Association Funds $0.15 - See note (5)	$ 0.15	$ 0.15	$ 0.15
CPP - See note (7)	$ 1.75	$ -	$ -
EI - See note (8)	$ 0.87	$ -	$ -
Employer Health Tax (EHT) - See note (9)	$ 0.84	$ 1.26	$ 1.69
Workplace Safety Insurance Board (WSIB) - See note (	$ 4.15	$ -	$ -
Union Dues or/and Union Administration - See note (1	$ -	$ -	$ -
Shift Differential Payment - See note (12)	$ -	$ -	$ -
Total Rate Chargeable	**$ 60.76**	**$ 80.92**	**$ 107.84**

Roofers EPSCA Wage Schedule - APPENDIX "A" (5 DAY COVERAGE)

Description	Roofers- Apprentice 3Y		
	Plain Time	Overtime	Doubletime
Base Hourly rate from 01 May 2012 TO 30 April 2013	$ 29.40	$ 44.10	$ 58.80
Vacation Pay - See note (2)	$ 1.18	$ 1.76	$ 2.35
Holiday Pay - See note (3)	$ 1.76	$ 2.65	$ 3.53
Welfare - See note (4) included below	$ -	$ -	$ -
Benefits/Admin (welfare, Pension)	$ 7.48	$ 11.22	$ 14.96
Union Funds $1.04 - See note (4), (5) & (6)	$ 1.04	$ 1.56	$ 2.08
Total Wage Package	**$ 40.86**	**$ 61.29**	**$ 81.72**
EPSCA Association Funds $0.15 - See note (5)	$ 0.15	$ 0.15	$ 0.15
CPP - See note (7)	$ 1.75	$ -	$ -
EI - See note (8)	$ 0.87	$ -	$ -
Employer Health Tax (EHT) - See note (9)	$ 0.63	$ 0.95	$ 1.26
Workplace Safety Insurance Board (WSIB) - See note (	$ 4.15	$ -	$ -
Union Dues or/and Union Administration - See note (1	$ -	$ -	$ -
Shift Differential Payment - See note (12)	$ -	$ -	$ -
Total Rate Chargeable	**$ 48.41**	**$ 62.39**	**$ 83.13**

Hourly Rate Calculation: 10 Hrs / Shift, 1 Shift (Appendix A, 5 day Coverage)

Description	Gross Hour Working Time	Roofers- 100% (Effective Date: 01 May 2012 to 30 April 2013)				Net Hours	Total Cost
		Foreman Roofers	Subforeman Roofers	Journeyman Roofers	Apprentice (3rd Roofers		
First Shift							
Lunch Time							
Workhours Mon. to Fri.	37.5	225.0	1,350.0	8,100.0	2,025.0	11,700	
		$62.01		$58.02	$48.41		
		$13,952	$0	$469,922	$98,025		$581,899
Overtime (Mon - Fri)							
						3120	
		$82.79	$0.00	$76.80	$62.39		
		$4,967	$0	$165,882	$33,688		$204,538
TOTAL	50					14,820	$786,437
Labour Rate - EPSCA (10 hrs per shift x 1 shifts per day x 5 days per week) - $/hr							$53.07

Mon-Fri (First Shift): Regular scheduled hours of work of up to 10 hours per shift
Mon-Fri (Second Shift): Regular scheduled hours of work of up to 10 hours per shift plus a shift differential of 1/5 of the straight time hourlt rate
Mon-Fri (Third Shift): Regular scheduled hours of work of up to 10 hours per shift plus a shift differential of 1/5 of the straight time hourlt rate
Sat: 2 times for all hours worked.
Sun & Hol: 2 times for all hours worked.
Overtime: first two hours of overtime worked as an extension to the regularly scheduled hours of work (Mon-Fri) shall be paid 1-1/2 times the base hourly rate.

Roofers EPSCA Wage Schedule - APPENDIX "A" (5 DAY COVERAGE)

Description	Roofers- Foreman		
	Plain Time	Overtime	Doubletime
Base Hourly rate from 01 May 2012 TO 30 April 2013	$ 40.29	$ 60.44	$ 80.58
Vacation Pay - See note (2)	$ 1.61	$ 2.42	$ 3.22
Holiday Pay - See note (3)	$ 2.42	$ 3.63	$ 4.83
Welfare - See note (4) included below	$ -	$ -	$ -
Benefits/Admin (welfare, Pension)	$ 8.61	$ 12.92	$ 17.22
Union Funds $1.30 - See note (4), (5) & (6)	$ 1.30	$ 1.95	$ 2.60
Total Wage Package	**$ 54.23**	**$ 81.34**	**$ 108.46**
EPSCA Association Funds $0.15 - See note (5)	$ 0.15	$ 0.15	$ 0.15
CPP - See note (7)	$ 1.75	$ -	$ -
EI - See note (8)	$ 0.87	$ -	$ -
Employer Health Tax (EHT) - See note (9)	$ 0.86	$ 1.30	$ 1.73
Workplace Safety Insurance Board (WSIB) - See note (	$ 4.15	$ -	$ -
Union Dues or/and Union Administration - See note (1	$ -	$ -	$ -
Shift Differential Payment - See note (12)	$ -	$ -	$ -
Total Rate Chargeable	**$ 62.01**	**$ 82.79**	**$ 110.34**

Roofers EPSCA Wage Schedule - APPENDIX "A" (5 DAY COVERAGE)

Description	Roofers- Journeyman		
	Plain Time	Overtime	Doubletime
Base Hourly rate from 01 May 2012 TO 30 April 2013	$ 36.79	$ 55.19	$ 73.58
Vacation Pay - See note (2)	$ 1.47	$ 2.21	$ 2.94
Holiday Pay - See note (3)	$ 2.21	$ 3.31	$ 4.41
Welfare - See note (4) included below	$ -	$ -	$ -
Benefits/Admin (welfare, Pension)	$ 8.61	$ 12.92	$ 17.22
Union Funds $1.30 - See note (4), (5) & (6)	$ 1.23	$ 1.85	$ 2.46
Total Wage Package	**$ 50.31**	**$ 75.46**	**$ 100.62**
EPSCA Association Funds $0.15 - See note (5)	$ 0.15	$ 0.15	$ 0.15
CPP - See note (7)	$ 1.75	$ -	$ -
EI - See note (8)	$ 0.87	$ -	$ -
Employer Health Tax (EHT) - See note (9)	$ 0.79	$ 1.18	$ 1.58
Workplace Safety Insurance Board (WSIB) - See note (	$ 4.15	$ -	$ -
Union Dues or/and Union Administration - See note (1	$ -	$ -	$ -
Shift Differential Payment - See note (12)	$ -	$ -	$ -
Total Rate Chargeable	**$ 58.02**	**$ 76.80**	**$ 102.35**

Sheetmetal EPSCA Wage Schedule - APPENDIX "A" (5 DAY COVERAGE)

Description	Sheetmetal - Foreman		
	Plain Time	Overtime	Doubletime
Base Hourly rate from 01 May 2012 TO 30 April 2013	$ 21.45	$ 32.18	$ 42.90
Vacation Pay - See note (2)	$ 0.86	$ 1.29	$ 1.72
Holiday Pay - See note (3)	$ 1.29	$ 1.93	$ 2.57
Welfare $4.11 - See note (4)	$ 4.11	$ 6.17	$ 8.22
Pension $7.75 - See note (4)	$ 4.14	$ 6.21	$ 8.28
Union Funds $0.16 - See note (4), (5) & (6)	$ 0.16	$ 0.24	$ 0.32
Total Wage Package	**$ 32.01**	**$ 48.01**	**$ 64.01**
EPSCA Association Funds $0.15 - See note (5)	$ 0.15	$ 0.15	$ 0.15
CPP - See note (7)	$ 1.75	$ -	$ -
EI - See note (8)	$ 0.87	$ -	$ -
Employer Health Tax (EHT) - See note (9)	$ 0.46	$ 0.69	$ 0.92
Workplace Safety Insurance Board (WSIB) - See note (	$ 4.15	$ -	$ -
Union Dues or/and Union Administration - See note (1	$ -	$ -	$ -
Shift Differential Payment - See note (12)	$ -	$ -	$ -
Total Rate Chargeable	**$ 39.38**	**$ 48.85**	**$ 65.08**

Hourly Rate Calculation: 10 Hrs / Shift, 1 Shift (Appendix A, 5 day Coverage)

Description	Gross Hour Working Time	Sheet metal Workers- 100% (Effective Date: 01 May 2012 to 30 April 2013)				Net Hours	Total Cost
		Foreman	Subforeman	Journeyman	Apprentice (3rd yea		
		Sheet Metal Workers	Sheet Metal Workers	Sheet Metal Workers	Sheet Metal Workers		
First Shift							
Lunch Time							
Workhours Mon. to Fri.	37.5	225.0	1,350.0	8,100.0	2,025.0	11,700	
		$65.47		$60.98	$39.38		
		$14,730	$85,124	$493,938	$79,749		$673,541
Overtime (Mon - Fri)							
						3120	
		$87.97	$84.36	$81.24	$48.85		
		$5,278	$30,368	$175,489	$26,378		$237,513
TOTAL	50					14,820	$911,054
Labour Rate - EPSCA (10 hrs per shift x 1 shifts per day x 5 days per week) - $/hr							$61.47

Mon-Fri (First Shift): Regular scheduled hours of work of up to 10 hours per shift
Mon-Fri (Second Shift): Regular scheduled hours of work of up to 10 hours per shift plus a shift differential of 1/5 of the straight time hourlt rate
Mon-Fri (Third Shift): Regular scheduled hours of work of up to 10 hours per shift plus a shift differential of 1/5 of the straight time hourlt rate
Sat: 2 times for all hours worked.
Sun & Hol: 2 times for all hours worked.
Overtime: first two hours of overtime worked as an extension to the regularly scheduled hours of work (Mon-Fri) shall be paid 1-1/2 times the base hourly rate.

Sheetmetal EPSCA Wage Schedule - APPENDIX "A" (5 DAY COVERAGE)

Description	Sheetmetal - Foreman		
	Plain Time	Overtime	Doubletime
Base Hourly rate from 01 May 2012 TO 30 April 2013	$ 41.49	$ 62.24	$ 82.98
Vacation Pay - See note (2)	$ 1.66	$ 2.49	$ 3.32
Holiday Pay - See note (3)	$ 2.49	$ 3.73	$ 4.98
Welfare $4.11 - See note (4)	$ 4.11	$ 6.17	$ 8.22
Pension $7.75 - See note (4)	$ 7.75	$ 11.63	$ 15.50
Union Funds $0.16 - See note (4), (5) & (6)	$ 0.16	$ 0.24	$ 0.32
Total Wage Package	**$ 57.66**	**$ 86.49**	**$ 115.32**
EPSCA Association Funds $0.15 - See note (5)	$ 0.15	$ 0.15	$ 0.15
CPP - See note (7)	$ 1.75	$ -	$ -
EI - See note (8)	$ 0.87	$ -	$ -
Employer Health Tax (EHT) - See note (9)	$ 0.89	$ 1.33	$ 1.78
Workplace Safety Insurance Board (WSIB) - See note (	$ 4.15	$ -	$ -
Union Dues or/and Union Administration - See note (1	$ -	$ -	$ -
Shift Differential Payment - See note (12)	$ -	$ -	$ -
Total Rate Chargeable	**$ 65.47**	**$ 87.97**	**$ 117.25**

Sheetmetal EPSCA Wage Schedule - APPENDIX "A" (5 DAY COVERAGE)

Description	Sheetmetal - Foreman		
	Plain Time	Overtime	Doubletime
Base Hourly rate from 01 May 2012 TO 30 April 2013	$ 37.49	$ 56.24	$ 74.98
Vacation Pay - See note (2)	$ 1.50	$ 2.25	$ 3.00
Holiday Pay - See note (3)	$ 2.25	$ 3.37	$ 4.50
Welfare $4.11 - See note (4)	$ 4.11	$ 6.17	$ 8.22
Pension $7.75 - See note (4)	$ 7.75	$ 11.63	$ 15.50
Union Funds $0.16 - See note (4), (5) & (6)	$ 0.16	$ 0.24	$ 0.32
Total Wage Package	**$ 53.26**	**$ 79.89**	**$ 106.52**
EPSCA Association Funds $0.15 - See note (5)	$ 0.15	$ 0.15	$ 0.15
CPP - See note (7)	$ 1.75	$ -	$ -
EI - See note (8)	$ 0.87	$ -	$ -
Employer Health Tax (EHT) - See note (9)	$ 0.80	$ 1.21	$ 1.61
Workplace Safety Insurance Board (WSIB) - See note (	$ 4.15	$ -	$ -
Union Dues or/and Union Administration - See note (1	$ -	$ -	$ -
Shift Differential Payment - See note (12)	$ -	$ -	$ -
Total Rate Chargeable	**$ 60.98**	**$ 81.24**	**$ 108.28**

Sheetmetal EPSCA Wage Schedule - APPENDIX "A" (5 DAY COVERAGE)

Description	Sheetmetal - Foreman		
	Plain Time	Overtime	Doubletime
Base Hourly rate from 01 May 2012 TO 30 April 2013	$ 39.34	$ 59.01	$ 78.68
Vacation Pay - See note (2)	$ 1.57	$ 2.36	$ 3.15
Holiday Pay - See note (3)	$ 2.36	$ 3.54	$ 4.72
Welfare $4.11 - See note (4)	$ 4.11	$ 6.17	$ 8.22
Pension $7.75 - See note (4)	$ 7.75	$ 11.63	$ 15.50
Union Funds $0.16 - See note (4), (5) & (6)	$ 0.16	$ 0.24	$ 0.32
Total Wage Package	**$ 55.29**	**$ 82.94**	**$ 110.59**
EPSCA Association Funds $0.15 - See note (5)	$ 0.15	$ 0.15	$ 0.15
CPP - See note (7)	$ 1.75	$ -	$ -
EI - See note (8)	$ 0.87	$ -	$ -
Employer Health Tax (EHT) - See note (9)	$ 0.84	$ 1.27	$ 1.69
Workplace Safety Insurance Board (WSIB) - See note (	$ 4.15	$ -	$ -
Union Dues or/and Union Administration - See note (1	$ -	$ -	$ -
Shift Differential Payment - See note (12)	$ -	$ -	$ -
Total Rate Chargeable	**$ 63.05**	**$ 84.36**	**$ 112.43**

13 Appendix G – Indirect Cost Breakdown

DNGS Heavy Water Management Building - Indirect Costs

Item	Description	Typical Allowance	Allowance for D2O Storage
1	Average Trade Rate		
2	Construction Equipment	18.00%	10.00%
3	Small Tools and Consumables	10.00%	Inc. Elsewhere
4	Subcontractors Staff	6.00%	6.00%
5	Temporary Facilities	2.00%	Inc. Elsewhere
6	Indirect Supplies	5.00%	5.00%
7	Business Expenses	2.00%	2.00%
8	Non Productive Labor	3.00%	Inc. Elsewhere
9	Training	0.50%	0.50%
10	Safety Training	5.00%	5.00%
11	General Foreman	2.00%	2.00%
12	Dedicated Material Handling Team	3.00%	Inc. Elsewhere
13	Scaffold	3.00%	3.00%
14	Welder Testing	0.10%	0.10%
15	Premium Time over 40Hr Week	6.50%	Inc. Elsewhere
16	Profit	10.00%	Inc. Elsewhere
		76.10%	**33.60%**
	Union Security - Employers EPSCA	0.00%	0.00%
	Protective Clothing	0.16%	0.16%
	Call In Pay	0.12%	0.12%
	Reporting Pay	0.12%	0.12%
	Inclement Weather Pay	0.06%	0.00%
	Replacement Tools	0.01%	0.01%
	Rubber Suits	0.15%	0.00%
	Work ing Premiums	0.00%	0.00%
	Fire Duty	27.13%	5.00%
	Zone 3 Meal Allowance	0.28%	0.00%
	Zone 3 Rest Allowance	1.54%	0.00%
	Other Zone Rest Allowance	0.00%	0.00%
	Other Meals in Overtime	4.42%	4.42%
	Daily Travel Allowance (i.e. NOT receivir	3.19%	1.00%
	Room and Board (in effect Travel Allowa	0.00%	0.00%
	Room and Board (in effect Subsistence b	5.04%	0.00%
	Subsistence Allowance (Temp Accommo	2.04%	0.00%
	Initial Travel and Transportation	0.11%	0.11%
	Bill 162 Contributions	0.00%	0.00%
	Trade Improvement Plan	0.00%	0.00%
	Stabilization Fund	0.00%	0.00%
		44.36%	**10.94%**

Total		**44.54%**

14 Appendix H – AACE Estimate Classification

The following represents an assessment of the AACE Estimate classification:

	ESTIMATE CLASSIFICATION				
GENERAL PROJECT DATA :	**CLASS 5**	**CLASS 4**	**CLASS 3**	**CLASS 2**	**CLASS 1**
Project Scope Description	General	Preliminary	Defined	Defined	Defined
Plant Production / Facility Capacity	Assumed	Preliminary	Defined	Defined	Defined
Plant Location	General	Approximate	Specific	Specific	Specific
Soils & Hydrology	None	Preliminary	Defined	Defined	Defined
Integrated Project Plan	None	Preliminary	Defined	Defined	Defined
Project Master Schedule	None	Preliminary	Defined	Defined	Defined
Escalation Strategy	None	Preliminary	Defined	Defined	Defined
Work Breakdown Structure	None	Preliminary	Defined	Defined	Defined
Project Code of Accounts	None	Preliminary	Defined	Defined	Defined
Contracting Strategy	Assumed	Assumed	Preliminary	Defined	Defined
ENGINEERING DELIVERABLES :					
Block Flow Diagrams	Started / Prelim.	Prelim. / Complete	Complete	Complete	Complete
Plot Plans	None	Started	Prelim. / Complete	Complete	Complete
Process Flow Diagrams (PFD's)	None	Started / Prelim.	Prelim. / Complete	Complete	Complete
Utility Flow Diagrams (UFD's)	None	Started / Prelim.	Prelim. / Complete	Complete	Complete
Piping & Instrumentation Diagrams (P&ID's)	None	Started	Prelim. / Complete	Complete	Complete
Process Equipment List	None	Started	Prelim. / Complete	Complete	Complete
Electrical Line Diagrams	None	Started / Prelim.	Prelim. / Complete	Complete	Complete

Specifications and Data Sheets	None	Started / Prelim.	Prelim. / Complete	Complete	Complete
General Equipment Arrangement Drawings	None	Started / Prelim.	Prelim. / Complete	Complete	Complete
Spare Parts List	None	Started	Prelim. / Complete	Complete	Complete
Mechanical Drawings	None	Started	Prelim. / Complete	Complete	Complete
Electrical Drawings	None	None	Started / Prelim.	Preliminary	Complete
Instrument and Control System Drawings	None	None	Started	Preliminary	Prelim. / Complete
Civil Drawings	None	None	Started	Preliminary	Prelim. / Complete
Structural Drawings	None	None	Started	Preliminary	Prelim. / Complete
Other discipline trade drawings	None	None	Started	Preliminary	Prelim. / Complete

CONSTRUCTIVE EXPERTISE

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