

Qulliq Energy Corporation



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Qulliq Energy Corporation
Société d'énergie Qulliq
Qulliq Alruyaktuqtunik Ikumatjutiit

Application for Major Project Permit

KUGAARUK NEW POWER PLANT

December 2021



1 Executive Summary

2 Qulliq Energy Corporation (QEC) hereby applies to the Minister Responsible for Qulliq
3 Energy Corporation pursuant to section 18.1 of the *Qulliq Energy Corporation Act*,
4 R.S.N.W.T. 1988, c.N-2 for a project permit respecting the new Kugaaruk Power Plant
5 Project.

6 The project will have no impact on rates until the time of QEC's first General Rate
7 Application following the project in-service date, which is expected no earlier than the
8 2026/27 fiscal year.

9 Kugaaruk is a community with increasing demand for electricity, reflecting its growing
10 population and increasing government and commercial enterprise. The existing Kugaaruk
11 power plant is an aged plant which was constructed in 1974. It suffers from several
12 deficiencies, including unreliable superstructure, and aging systems and equipment.

13 In particular, the existing switchgear is aged and obsolete and requires replacement to
14 maintain reliability in the future. The building structure itself is also in poor condition and
15 with no room for expansion. This situation requires a solution to ensure QEC can continue
16 providing safe, reliable power to the community.

17 Proceeding with the proposed Project will maintain safe and reliable electricity supply in the
18 community at the lowest cost over the life of the facility. As well, QEC expects reductions
19 in fuel consumption with the installation of the new gensets. The key benefits of constructing
20 the new Power Plant in Kugaaruk include:

- 21 • Resolving power reliability and stability concerns by replacement/upgrading of
22 equipment and systems at the end of their useful service life.
- 23 • Resolving safety and operation concerns by addressing the current structural issues.
- 24 • Addressing environmental requirements of fuel storage system according to
25 applicable codes and standards.
- 26 • Integration capability with renewable energy resources.

27 QEC's estimated cost to complete the project is \$38.915 million. This project has been
28 identified to receive funding from the Arctic Energy Fund (AEF) Program for a contribution
29 of up to 75% of eligible expenses. The total funding available to QEC from the AEF Program
30 is \$175.0 million, of which \$130.1 million has been committed to the capital projects already
31 reviewed by the URRC and approved by the Minister Responsible for QEC. QEC intends
32 to equally allocate the remaining AEF Program funding of \$44.887 million between
33 Kugaaruk and Chesterfield Inlet new power plant capital projects. Accordingly, \$22.444



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- 1 million of the project cost will be funded by the AEF Program and as such QEC's customers
- 2 would only have to pay for approximately \$16.472 million of the total project cost.



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1 1.0 Application

2 Qulliq Energy Corporation (QEC) hereby applies to the Minister Responsible for Qulliq
3 Energy Corporation pursuant to Section 18.1 of the *Qulliq Energy Corporation Act*,
4 R.S.N.W.T. 1988, cN-2 for a major project permit for the Kugaaruk Power Plant Project.
5 QEC is requesting permission to proceed with this project. Details in support of the
6 requested project permit are set out below.

7 2.0 Background

8 QEC is committed to planning and developing cost effective and efficient ways to ensure
9 that energy supply remains safe, reliable and stable.

10 The Kugaaruk Power Plant was constructed in 1974. While the plant's installed capacity
11 can adequately meet the community's current and projected capacity requirements over
12 the next decade, the Kugaaruk facility is now 47 years old and is due for replacement for
13 multiple reasons, including the need to replace aging equipment; safety concerns, and
14 compliance with current safety and environmental regulations.

15 QEC intends to engage in a multiyear project to build a new four-engine power generation
16 plant in Kugaaruk, Nunavut. The project will include the installation of two 90,000-liter
17 capacity horizontal fuel tanks, an approximately 200-meter fuel pipeline to be constructed
18 to connect directly to the Petroleum Products Division (PPD) bulk fuel facility, an integral
19 heated garage for Radial Boom Derrick (RBD) truck storage, and approximately 1.25 km
20 of distribution lines.

21 The new plant will be fenced and have a secure service yard complete with two pole racks,
22 one transformer storage platform, one cable reel storage platform, space for an emergency
23 generator, a minimum of two storage sea cans, service transformers and feeder take off,
24 contained storage for new and waste fuel and glycol, and space for a Transient Unit
25 serviced from the power plant. The main power plant building will include an office, electrical
26 control room, mechanical room, and garage/workshop, in addition to the power generation
27 hall. The detailed design is anticipated to include the installation of industrial scrubbers and
28 hospital grade silencers on the radiator and exhaust system to assist in the reduction of
29 noise and exhaust emissions. The new plant will also be capable of integrating renewable
30 energy sources. Upgrades to the existing distribution system will be required to connect to
31 the new power plant. The new plant will have a life cycle of over 40 years and will be
32 capable of integrating renewable energy sources.

33 QEC met with the Kugaaruk Hamlet Council on August 25, 2020 to present four proposed
34 location options for the new power plant and outlined the pros and cons of each. On



1 August 28, 2020, QEC received approval from Hamlet Council to proceed with site
2 investigations on three of the four proposed locations (Figure 1). A geotechnical evaluation
3 and Phase I and Limited Phase II Environmental Site Assessment was completed for all
4 three locations in Fall 2020. The site investigations suggested that Option 1, located
5 immediately east of the PPD Bulk Fuel Facility (QECs preferred location) and Option 2
6 located approximately 230 m south and slightly west of the PPD Bulk Fuel Facility were
7 technically feasible.

8 On January 14, 2021, Kugaaruk Hamlet Council passed a motion giving QEC approval to
9 proceed with further site investigation and planning for the Option 2, citing concerns with
10 Option 1 being too close to the PPD Bulk Fuel Facility and to the road. Following the letter
11 from the Minister responsible for QEC, dated March 8, 2021, addressing some of the
12 concerns the Hamlet Council identified in relation to Option 1, Kugaaruk Hamlet Council
13 passed a motion, dated March 11, 2021, giving QEC approval to proceed with further site
14 planning for the Option 1 location.

15 In September, 2021, the Government of Nunavut (GN) Department of Community and
16 Government Services (CGS) Planning and Lands Division raised concerns regarding
17 Option 1 location, indicating that the proposed lot included a road that was critical to the
18 industrial infrastructure currently in the area and could not be removed or relocated.
19 Following the discussions between QEC and GN CGS Planning and Lands regarding the
20 location options, a revised lot was identified in October 2021, immediately south of the PPD
21 Bulk Fuel Facility (Revised Location, Option 4; Figure 1). In addition to the approval from
22 Hamlet Council, this location would require that PPD release an unused portion of the lot
23 for the Bulk Fuel Facility, which PPD indicated they were supportive of should geotechnical
24 and environmental site investigations confirm the location is feasible.

25 Once site investigations are complete (anticipated to be complete in December 2021) and
26 assuming Option 4 is determined to be feasible, formal land application will be submitted
27 to the Hamlet and subsequent discussions will be required with PPD. Once the location is
28 confirmed, QEC will also proceed with submissions to the Nunavut Planning Commission
29 (NPC) and Nunavut Impact Review Board (NIRB).



1 **Figure 1 - Location of Proposed New Plant (Revised Location, Option 4)**



2
3 Geotechnical and Environmental studies on Option 4 are in progress, and if determined to
4 be required, an archeological impact assessment will be initiated thereafter. QEC
5 anticipates submitting to Nunavut Impact Review Board (NIRB) after land approval for the
6 proposed site has been obtained from the Hamlet.

7 **3.0 Existing Facility**

8 **3.1 Introduction**

9 Kugaaruk is a hamlet located on the shore of Pelly Bay in the Kitikmeot Region of Nunavut,
10 Canada. Figure 2 provides a map indicating the location of Kugaaruk.



1

Figure 2 - Kugaaruk



2

3 Access to the community is limited to air and sea traffic travel only. The community fuel
4 resupply is carried out annually in the summer/fall via fuel supply tanker. Some of the
5 largest electricity loads in the community include the Hamlet Office & Community Centre,
6 Arctic College, the Kugaardjuq School, Health Centre, Northern Store and Co-Op stores.

7 QEC and its predecessors, the Northwest Territories Power Corporation (NTPC) and the
8 Northern Canada Power Corporation (NCPC), have operated the diesel generating plant in
9 Kugaaruk since the plant was constructed in 1974.

10 In 2021, to address projected load growth for the community, QEC installed a 500 kW
11 emergency generation unit that was transferred from the old plant in Pangnirtung.

12 Table 1 summarizes the current Genset line-up of the plant.



1 **Table 1 - Kugaaruk Power Plant Genset Line-up**

Unit	Make	Model	kW Rating	Year Installed	Engine Hours (Oct 2021)	Engine Life Hours
G1	Detroit	Series 60	320	2004	50,342	72,000
G2	Caterpillar	D3508B	550	2009	51,958	100,000
G5	Caterpillar	D3508B	550	2009	45,349	100,000
Total Installed Capacity			1,420			
Installed Firm Capacity			870			

2 Installed Firm Capacity= Plant capacity with the largest unit out of service

3 **3.2 Condition**

4 The facility is 47 years old and has exceeded its 40-year design life. The overall condition
 5 of the facility is poor. The current plant has a number of technical and engineering
 6 deficiencies, including:

- 7 1) **Aging Infrastructure**: The facility is 47 years old. The building and ancillary
 8 equipment are old and have begun to deteriorate.
- 9 2) **Safety Issues**: The facility is a very old plant and is at a higher risk of equipment
 10 failure. The existing switchgear is not Arc Flash resistant nor can it be modified due
 11 to age. This increases the fire and safety risk of the facility.
- 12 3) **Environmental Requirements**: The existing plant has a single-walled fuel tank that
 13 is not compliant with the federal storage tank system regulations and codes of
 14 practice. In addition, the tank is housed in a berm that is showing signs of coating
 15 failure, corrosion, and structural integrity issues that have potential to negatively
 16 affect the integrity of the bottom of the fuel tank.

17 **4.0 Future Growth**

18 QEC recognizes the need for a long-term approach to prioritize and maximize the benefit
 19 of capital expenditures while providing safe and reliable electricity service.

20 **4.1 Population Forecast**

21 The population of Kugaaruk is estimated to reach 816 in 2021 according to the Nunavut
 22 Bureau of Statistics. Table 2 summarizes population projections for Kugaaruk through
 23 2036.



1

Table 2 - Kugaaruk Population Projections

YEAR	PROJECTED POPULATION
2021	816
2026	881
2031	922
2036	946

2

Source: Nunavut Bureau of Statistics

3 **4.2 Load Forecast**

4 Table 3 summarizes the load forecast for Kugaaruk. With the proposed plant capacity QEC
 5 will be able to meet community's power demand and provide reliable and safe electricity in
 6 the community for the foreseeable future.

7

Table 3 - Kugaaruk Actual Load and Load Forecast

	Fiscal Year	Generation MWh	Peak Load kW	Change %	RFC kW	Existing Plant IFC kW	RFC Surplus
Actual	2013	2,654	733		806	870	7%
	2014	2,753	561	-23%	617	870	29%
	2015	2,801	734	31%	807	870	7%
	2016	2,829	669	-9%	736	870	15%
	2017	2,900	688	3%	757	870	13%
	2018	3,080	768	12%	845	870	3%
	2019	3,836	806	5%	887	870	-2%
	2020	3,695	719	-11%	791	870	9%
Forecast	2021	3,782	764	6%	841	870	3%
	2022	3,895	787	3%	866	870	0%
	2023	3,842	776	-1%	854	870	2%
	2024	3,892	786	1%	865	870	1%
	2025	3,929	788	0%	867	870	0%
	2026	3,941	795	1%	875	870	-1%
	2027	3,974	802	1%	882	870	-1%
	2028	4,002	807	1%	888	870	-2%
	2029	4,027	811	1%	893	870	-3%
	2030	4,056	817	1%	899	870	-3%

RFC=Required Firm Capacity = 110% of Peak Load

IFC=Installed Firm Capacity= Capacity with the largest unit out of service

8



1 Table 4 illustrates plant capacity and RFC requirements with the proposed Project.

2 **Table 4 - Kugaaruk RFC Surplus Projection**
 3 **with New Power Plant Project**

	Fiscal Year	Generation MWh	Peak Load kW	Change %	RFC kW	Existing/ New Plant IFC kW	RFC Surplus
Actual	2013	2,654	733		806	870	7%
	2014	2,753	561	-23%	617	870	29%
	2015	2,801	734	31%	807	870	7%
	2016	2,829	669	-9%	736	870	15%
	2017	2,900	688	3%	757	870	13%
	2018	3,080	768	12%	845	870	3%
	2019	3,836	806	5%	887	870	-2%
	2020	3,695	719	-11%	791	870	9%
Forecast	2021	3,782	764	6%	841	870	3%
	2022	3,895	787	3%	866	870	0%
	2023	3,842	776	-1%	854	870	2%
	2024	3,892	786	1%	865	870	1%
	2025	3,929	788	0%	867	870	0%
	2026	3,941	795	1%	875	870	-1%
	2027	3,974	802	1%	882	870	-1%
	2028	4,002	807	1%	888	1,660	47%
	2029	4,027	811	1%	893	1,660	46%
	2030	4,056	817	1%	899	1,660	46%

RFC=Required Firm Capacity = 110% of Peak Load

IFC=Installed Firm Capacity= Capacity with the largest unit out of service

4

5 5.0 Assessment of Project Options

5

6 QEC recognizes the need for a long-term approach to prioritize and maximize the benefit
 7 of capital expenditures while providing safe and reliable electricity service.

6

7

8 The existing plant deficiencies mean the “Do Nothing” option is not a viable option.
 9 Operating assets beyond their service life also places a larger burden on QEC’s
 10 maintenance and operations personnel by trying to maintain and operate assets that should
 11 be replaced.

8

9

10

11



1 QEC investigated the following options as potential solutions to address the deficiencies at
2 the existing plant.

3 **Option 1 – Major Plant Upgrade**

4 This option includes upgrading and replacement of major components and systems within
5 the existing facility, including the gensets.

6 However, this option is not technically feasible for the following reasons:

- 7 • The plant has deteriorated due to age and is beyond upgrading;
- 8 • Upgrading the existing plant requires the installation of temporary generation
9 equipment on the same site, which is not feasible;
- 10 • Potential hazards associated with both existing overhead and underground
11 distribution infrastructure; Power supply will disrupt during the construction phase to
12 move equipment and materials around the site;
- 13 • The existing plant site does not have sufficient land space to accommodate a plant
14 expansion.

15 Based on these considerations, Option 1 is not a viable option.

16 **Option 2 – Construct a New Plant at a New Location**

17 This option involves the construction of a new power plant at a suitable location in the
18 community.

19 The plant would be a four-engine generation facility designed for a 40-year life and would
20 incorporate new technology to improve reliability, efficiency, operation, and safety. The
21 plant would meet current operational, safety and environmental regulations. The new
22 construction will include fuel storage consisting of two 90,000-liter double wall horizontal
23 fuel tanks, approximately 200-meter fuel pipeline to connect to the PPD bulk fuel facility,
24 appropriate pumping facilities, an integral heated garage for Radial Boom Derrick (RBD)
25 truck storage, pole racks, concrete pad for transformer, and new and waste oil storage,
26 storage for two sea cans, and approximately 1.25 km of distribution lines.

27 The plant would generate less noise and air pollution, due to the installation of equipment
28 such as industrial scrubbers and hospital grade silencers. Construction of a new power
29 plant facility allows QEC to incorporate geotechnical and environmental factors; such as
30 depth to bedrock, permafrost, prevailing winds, snow accumulation, surface water drainage
31 and surrounding land uses, into site selection and engineering design. The new plant would
32 also be designed to be capable of integrating renewable energy sources.



1 The proposed generating capacity of the new plant is approximately 2,410 kW. A power
 2 plant of this capacity will meet Kugaaruk’s peak load projections for the next 40 years.
 3 Table 5 indicates the genset ratings of the existing plant and proposed new plant.

4 **Table 5 - Existing and Proposed Genset Line-up**

Existing Units	Existing Rating (KW)	Proposed Units	Proposed Rating (KW)
G1	320	G1	750
G2	550	G2	750
G3	550	G3	550
		G4	360
Total Install	1,420		2,410
IFC	870	IFC	1,660

5 IFC=Installed Firm Capacity= Capacity with the largest unit out of service

6 Based on the manufacturing of the engines the expected installed capacity of the new plant
 7 is 2,410 kW. QEC dispatch programming is set at 80% of capacity of engines online to
 8 ensure reliability and good fuel economy.

9 The installed firm capacity (IFC) of the plant will be 1,660 kW. At the target load of
 10 approximately 80% of the capacity to maximize the fuel efficiency, the adjusted installed
 11 firm capacity of the plant will be approximately 1,328 kW.

12 The RFC requirement for the community is projected at approximately 882 kW by 2026/27.
 13 Option 2 proposes a firm capacity taking into consideration the following:

- 14 1. Kugaaruk is a growing community in Nunavut.
- 15 2. The plant is being built for long-term use.

16 Anticipated benefits from the new plant include the following:

- 17 • Resolving power reliability and stability concerns by replacement/upgrading of
 18 equipment and systems at the end of their useful service life; and
- 19 • Resolving safety and operation concerns by addressing the current structural issues.

20 The total preliminary cost estimate for Option 2 is \$38.915 million. This cost is a preliminary
 21 D-class estimate with accuracy of +/- 25%. The cost is subject to refinement during the
 22 project design.

23 This project has been identified to receive funding from the Arctic Energy Fund (AEF)
 24 Program for a contribution of up to 75% of eligible expenses. The total funding available to
 25 QEC from the AEF Program is \$175.0 million, of which \$130.1 million has been committed



1 to the capital projects already reviewed by the URRC and approved by the Minister
 2 Responsible for QEC. QEC intends to equally allocate the remaining AEF Program funding
 3 of \$44.887 million between Kugaaruk and Chesterfield Inlet new power plant capital
 4 projects. Accordingly, \$22.444 million of the project cost will be funded by the AEF Program.
 5 As such, the net cost of the new plant for QEC’s customers is estimated at \$16.472 million
 6 as detailed in Table 6.

7 **Table 6 - Project Contribution (\$000)**

Description	2023/24	2024/25	2025/26	2026/27	Total
Plant Replacement	1,102	7,009	14,288	16,516	38,915
AEF Ineligible Expenses ¹	352	432	330	610	1,723
AEF Contribution - 75%	563	4,933	10,469	6,479	22,444
QEC Contribution - 25%	188	1,644	3,490	9,428	14,749
Total	1,102	7,009	14,288	16,516	38,915
Total QEC Contribution	539	2,076	3,819	10,037	16,472

Note:

1. Ineligible expenses includes land acquisition and in-house administration expenses.

8
 9 After examining the options, QEC considers the most feasible and cost effective option is
 10 to pursue the construction of a new plant. QEC will maintain and operate the existing facility
 11 until the new plant is operational.

12 Prior to demolition of the old power plant all major components will be reviewed during
 13 asset disposal process to evaluate age, reliability and feasibility to re-purpose any or all of
 14 these major components. The recently installed emergency generation unit will be kept in
 15 Kugaaruk as an emergency mobile unit.

16 QEC proposes to design the Kugaaruk Plant with the ability to integrate potential renewable
 17 energy sources in the future.

18 **6.0 Impact of the Project on Ratepayers**

19 QEC conducted an analysis of the impact of the Project on ratepayers in the community of
 20 Kugaaruk. It should be noted that the project will have no impact on rates until the time of
 21 QEC’s General Rate Application following the project coming in-service, which is expected
 22 no earlier than the 2026/27 fiscal year.

23 QEC conducted the rate impact analysis based on the current system of community-based
 24 rates, as well as an alternative territorial rate design option. Under the current system, rate
 25 impacts to communities needing new power plants are high. These rate increases could be



1 mitigated by rate options including moving to a territory-wide rate, or if community based
 2 rates were to continue, by not reflecting the full impact of the new capital addition in rates
 3 for the community (so that the revenue to cost coverage ratio for the community would be
 4 below unity and other communities would be required to have revenue to cost coverage
 5 ratios above unity).

6 The rate impact analysis is based on QEC's estimated cost for this project of \$16.472
 7 million, after the AEF contribution. While the Project is expected to improve fuel efficiency
 8 compared to the existing genset, QEC performed a conservative rate impact analysis which
 9 does not include expected fuel savings benefit of the Project.

10 Table 7 summarizes the estimated incremental revenue requirement increase due to the
 11 project of \$1.473 million. The estimated rate increase under the community-based rates is
 12 40.47 cents/kWh, which is high at 34.9% increase over the current domestic rate of 116.05
 13 cents/kWh in Kugaaruk. However, under a territorial rate design scenario the estimated
 14 average rate increase is 0.74 cents/kWh, or 0.6% over the current domestic rate of 116.05
 15 cents/kWh.

16 **Table 7 - Kugaaruk New Power Plant Estimated Rate Impact**

Project Characteristics	
Net Capital Cost (\$ 000)	16,472
Amortization Period (year)	40
GRA Approved Return on Ratebase	6.45%
Revenue Requirement Impacts	
Amortization Expense (\$ 000)	412
Return on Ratebase (\$ 000)	1,062
sub-total: Revenue Requirement Increase (\$ 000)	1,473
Total Revenue Requirement Impact (\$ 000)	1,473
Kugaaruk 2026/27 Forecast Sales (MWh)	3,641
Average Community-Based Rate Increase (c/kWh)	40.47
Territorial 2026/27 Forecast Sales (MWh)	198,032
Average Territorial Rate Increase (c/kWh)	0.74

17
 18 It is important to note that this analysis has been provided for illustrative purposes only.
 19 Actual rate impacts will depend on the overall revenue requirements and rate designs
 20 approved in subsequent General Rate Applications.



1 **7.0 Grounds in Support of the Application**

2 The implementation of the proposed Project is very important to QEC's customers and the
3 public. The implementation of the project will address the following primary concerns:

4 • **Safety Concerns**

5 Construction of a new power plant will allow QEC to address the existing deficiencies with
6 the current power plant related to the safety concerns. In particular, the existing switchgear
7 is aged and obsolete and not Arc resistant and cannot be modified, which increases fire
8 risk of the facility impacting the risk of future reliability or employee safety.

9 • **Environmental Requirements**

10 The existing fuel storage system is not in compliance with the current federal storage tank
11 system regulations and codes of practice. The proposed project will address these
12 environmental requirements.

13 • **Power Reliability and Stability**

14 Although IFC at the current plant meets QEC's RFC criterion, as the Kugaaruk power plant
15 continues to age and systems become more outdated, it will become more difficult to
16 maintain the facility and plant reliability will become an issue. Power is an essential service
17 in the North and perhaps more so for remote communities. Without reliable equipment,
18 QEC's customers are at risk of system failure. A new power plant equipped with new fuel-
19 efficient gensets and plant automation is expected to increase fuel efficiency and overall
20 plant reliability.

21 The new plant will be capable of integrating renewable energy sources, such as wind
22 turbines or solar panels should the opportunities arise in the future. This will help reduce
23 greenhouse gas emissions to the atmosphere and reduce the cost of energy in the end.

24 **8.0 Project Timeline**

25 Field study of Geotechnical and Phase I and Limited Phase II environmental assessments
26 are anticipated for completion by December 2021. If determined to be required through
27 consultation with the Government of Nunavut Department of Culture and Heritage, an
28 archaeological impact assessment will be completed in the 2022 field season under the
29 appropriate Class 2 Archaeology Permit.

30 The new power plant design will commence in the second quarter of 2023/24, with
31 specifications and tenders to allow for ordering of materials and construction contracts
32 beginning in the second quarter of 2024/25. Site grading works will begin during July -
33 September of 2025 and materials will be delivered during sealift 2025. Construction would



1 begin 2nd quarter of 2025/26 and be completed in 2026/27. Table 8 illustrates the proposed
 2 project schedule for reference purposes.

3 **Table 8 - Proposed Kugaaruk Power Plant Project Schedule**

Task Table	2021-2022				2022-2023				2023 - 2024				2024 - 2025				2025 - 2026				2026 - 2027			
	1 ST QT	2 ND QT	3 RD QT	4 TH QT	1 ST QT	2 ND QT	3 RD QT	4 TH QT	1 ST QT	2 ND QT	3 RD QT	4 TH QT	1 ST QT	2 ND QT	3 RD QT	4 TH QT	1 ST QT	2 ND QT	3 RD QT	4 TH QT	1 ST QT	2 ND QT	3 RD QT	4 TH QT
Finalize List of Proposed Sites																								
Geo-Tech Study and Recommendations																								
Site Selection Approval																								
Develop Business Case and Cost Estimate (Class 'D')																								
MPP Regulatory Process and Approval																								
FMB Approval																								
Tendering Stage																								
ProjectDetail Design																								
Construction contract Tender and Award																								
Construction																								
Substantial Completion																								
Project Handover																								
Project Close Out																								

4