Appendix 18B

Climate Change Risk Register

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# **APPENDIX 18B – CLIMATE CHANGE RISK REGISTER**

## **Power Plant Area**

## Initial Risks

	IDENTIFICATION						-	TIAL R					SIGNIFICANCE
Risk ID	Climate variable	Risk statement	Rece	ptors		Impact type	RC	al risk P4.5			P8.5		Significance
				<b>.</b>			(20	41-206	50)	(20	41-206	0)	
			Power Plant Area	Construction assets, plant and equipment	Staff and visitors on-site		Likelihood	Consequence	Risk rating	Likelihood	Consequence	Risk rating	
	ruction	1	1	1	1	1	-	1	1	1	1	1	
1	Extreme weather events (e.g storms)	Extreme weather events (e.g. storms) result in an inaccessible construction site or health and safety risk to workers, causing restricted working hours and a delay in operations.		•	•	Construction disruption Health and safety	Rare	Minor	Low	Unlikely	Minor	Low	Not significant
2	Extreme weather events (e.g storms)	Extreme weather events (e.g. storms) cause damage to construction materials, plant, and equipment.		•		Construction asset damage	Rare	Moderate	Medium	Unlikely	Moderate	Medium	Not significant
3	Extreme temperatures	Extreme temperatures result in unsuitable conditions for certain construction activities causing delays in construction.		•		Construction disruption	Rare	Minor	Low	Rare	Minor	Low	Not significant
4	Extreme rainfall	Extreme rainfall results in flooded areas and unsuitable conditions for certain construction activities causing delays in construction.		•		Construction disruption	Rare	Minor	Low	Unlikely	Minor	Low	Not significant
Opera	tion	•										•	·
5	Extreme heat	Extreme heat causes overheating of electrical equipment, as well as heat damage, deformation, cracking and thermal expansion of building surfaces and pavements.	•			Asset damage	Rare	Minor	Low	Unlikely	Minor	Low	Not significant

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6	Extreme heat	Extreme heat leads to increase in ambient temperature of buildings, impacting the thermal comfort of building users.		•	Health and safety	Rare	Minor	Low	Rare	Minor	Low	Not significant
7	Extreme heat	Extreme heat results in reduced efficiency in CCGT and OCGT operations.	•		Engineering / operational	Unlikely	Minor	Low	Moderate	Minor	Low	Not significant
8	Extreme rainfall	Extreme rainfall event leads to flooding of surfaces which has implications on safety, asset damage, and the operation of the plant.	•	•	Asset damage / engineering / operational Health and safety	Rare	Moderate	Low	Unlikely	Moderate	Medium	Not significant
9	Extreme weather events (e.g. storms)	Extreme weather events such as storms cause damage to plant infrastructure and equipment, causing stoppages in operation.	•	•	Asset damage / engineering / operational Health and safety	Rare	Moderate	Low	Unlikely	Moderate	Medium	Not significant

#### **Residual Risks**

SK I	DENTIFICATIO	N					IN	ITIAL F	risk				MITIGATION MEASURES								SIGNIFICANCE
isk	Climate	Risk statement	Rece	eptors		Impact type	Initi	al risk	rating				Embedded Mitigation Measures	Responsibility	Resi	dual ris	sk rat	ing			Significance
	variable							CP4.5 041-20	60)		P8.5 41-206	0)			RCP 2060	4.5 (20 )	41-		CP8.5 041-20		
			Power Plant Area	Construction assets, plant and equipment	Staff and visitors on-site		Likelihood	Consequence	Risk rating	Likelihood	Consequence	Risk rating			Likelihood	Consequence	Risk rating	Likelihood	Consequence	Risk rating	
isti	ruction		1			1	1		-		1			1		-		1			
	Extreme weather events (e.g storms)	Extreme weather events (e.g. storms) result in an inaccessible construction site or health and safety risk to workers, causing restricted working hours and a delay in operations.			•	Construction disruption Health and safety	Rare	Minor	Low	Unlikely	Minor	Low	Contractor to monitor weather and plan works accordingly	Contractor	Rare	Minor	-ow	Jnlikely	Minor	-ow	Not significant
	Extreme weather events (e.g storms)	Extreme weather events (e.g. storms) cause damage to construction materials, plant, and equipment.				Construction asset damage	Rare	Moderate	Medium	Unlikely	Moderate	Medium	Contractor to monitor weather and plan works accordingly	Contractor	Rare	Minor	-ow L	Unlikely	Minor	Mo	Not significant
	Extreme temperatures	Extreme temperatures result in unsuitable conditions for certain construction activities causing delays in construction.		•		Construction disruption	Rare	Minor	Low	Rare	Minor	Low	Contractor to monitor weather and plan works accordingly	Contractor	Rare				Insignificant		Not significant
	Extreme rainfall	Extreme rainfall results in flooded areas and unsuitable conditions for certain construction activities causing delays in construction.		•		Construction disruption	Rare	Minor	Low	Unlikely	Minor	Low	Contractor to monitor weather and plan works accordingly	Contractor	Rare	Minor	Low	Unlikely F	Minor	Low	Not significant
erat	tion Extreme	Extreme heat causes		1	1	Asset damage			[	1			Designed to Irish building standards;	Designer, Operator		[					Not significant
	heat	overheating of electrical equipment, as well as heat damage, deformation, cracking and thermal expansion of building surfaces and pavements.	•			, issue damage	Rare	Minor	Low	Unlikely	Minor	Low	designed to withstand a range of temperatures Infrastructure is to be maintained and monitored for degradation due to extreme temperatures		Rare	Minor	Low	Unlikely	Minor	Low	rior significant

6	Extreme heat	Extreme heat leads to increase in ambient temperature of buildings, impacting the thermal comfort of building users.			Health and safety	Rare	Minor	Low	Rare	Minor	Low	Designed to Irish building standards; designed for thermal comfort in a range of temperatures	Designer	Rare	Insignificant	Low	Rare	Insignificant	Low	Not significant
7	Extreme heat	Extreme heat results in reduced efficiency in CCGT and OCGT operations.			Engineering / operational	Unlikely	Minor	Low	Moderate	Minor	Low	The power plant is designed to operate over a large range of ambient conditions with negligible change in efficiency	Designer	Unlikely	Insignificant	Low	Moderate	Insignificant	Low	Not significant
8	Extreme rainfall	Extreme rainfall event leads to flooding of surfaces which has implications on safety, asset damage, and the operation of the plant.	•	•	Asset damage / engineering / operational Health and safety	Rare	Moderate	Low	Unlikely	Moderate	Medium	Flood protection designed to withstand 1:1000 year flood	Designer	Rare	Minor	Low	Unlikely	Minor	Low	Not significant
9	Extreme weather events (e.g. storms)	Extreme weather events such as storms cause damage to plant infrastructure and equipment, causing stoppages in operation.	•	•	Asset damage / engineering / operational Health and safety	Rare	Moderate	Low	Unlikely	Moderate	Medium	Designed to Irish building standards; design takes into consideration wind loadings. Emergency procedures are to be implemented against extreme weather events	Designer, Operator	Rare	Minor	Low	Unlikely	Minor	Low	Not significant

## **Electricity Grid Connection**

## Initial Risks

RISK	IDENTIFICATIO	N					INI	TIAL F	RISK				SIGNIFICANCE
Risk	Climate	Risk statement	Rece	ptors		Impact type	Initia	al risk	rating				Significance
ID	variable							CP4.5 041-20	60)		P8.5 41-206	0)	
			Electricity Grid Connection	Construction assets, plant and equipment	Staff and visitors on-site		Likelihood	Consequence	Risk rating	Likelihood	Consequence	Risk rating	
Const	ruction								•				
1	Extreme weather events (e.g storms)	Extreme weather events (e.g. storms) result in an inaccessible construction site or health and safety risk to workers, causing restricted working hours and a delay in operations.		•	•	Construction disruption Health and safety	Rare	Minor	Low	Unlikely	Minor	Low	Not significant
2	Extreme weather events (e.g storms)	Extreme weather events (e.g. storms) cause damage to construction materials, plant, and equipment.		•		Construction asset damage	Rare	Moderate	Medium	Unlikely	Moderate	Medium	Not significant
3	Extreme temperature s	Extreme temperatures result in unsuitable conditions for certain construction activities causing delays in construction.		•		Construction disruption	Rare	Minor	Low	Rare	Minor	Low	Not significant
4	Extreme rainfall	Extreme rainfall results in flooded areas and unsuitable conditions for certain construction activities causing delays in construction.		•		Construction disruption	Rare	Minor	Low	Unlikely	Minor	Low	Not significant
Opera	tion					·	• <u> </u>		•	·			•
5	Extreme heat	Extreme heat causes overheating of electrical equipment, as well as heat damage to electrical infrastructure.	•			Asset damage	Rare	Minor	Low	Unlikely	Minor	Low	Not significant
6	Extreme heat	Extreme heat leads causes heat stress for maintenance workers.			•	Health and safety		Jr			Jr		Not significant
							Rare	Minor	Low	Rare	Minor	Low	

7	Extreme rainfall	Extreme rainfall event leads to flooding which can damage substations and underground cables, disrupting electricity connection.	•	Asset damage / engineering / operational Health and safety	Rare	Moderate	Medium	Unlikely	Moderate	Medium	Not significant
8	Extreme weather events (e.g. storms)	Extreme weather events such as storms cause damage to overhead lines disrupting electricity connection.	•	Asset damage / engineering / operational Health and safety	Rare	Moderate	Medium	Unlikely	Moderate	Medium	Not significant

RISK	IDENTIFICATIO	N					IN	TIAL	RISK				MITIGATION MEASURES								SIGNIFICANCE
Risk	Climate	Risk statement	Rece	eptors		Impact type	Initi	al risk	rating				Embedded Mitigation Measures	Responsibility	Resi	dual ri	sk rat	ing			Significance
D	variable			•				CP4.5 041-20	60)		CP8.5	60)				4.5 (20		R	CP8.5 041-20		
			Electricity Grid Connection	Construction assets, plant and equipment	Staff and visitors on-site		Likelihood	Consequence	Risk rating	Likelihood	Consequence	Risk rating			Likelihood	Consequence	Risk rating	Likelihood	Consequence	Risk rating	
Const	ruction					1						_	-	1	. –						-
1	Extreme weather events (e.g storms)	Extreme weather events (e.g. storms) result in an inaccessible construction site or health and safety risk to workers, causing restricted working hours and a delay in operations.		•	•	Construction disruption Health and safety	Rare	Minor	Low	Unlikely	Minor	Low	Contractor to monitor weather and plan works accordingly	Contractor	Rare	Minor	-OW	Jnlikely	Minor	-ow	Not significant
2	Extreme weather events (e.g storms)	Extreme weather events (e.g. storms) cause damage to construction materials, plant, and equipment.		•		Construction asset damage	Rare	Moderate	Medium	Unlikely	Moderate	Medium	Contractor to monitor weather and plan works accordingly	Contractor	Rare	Minor	-ow	Unlikely l	Minor	-ow L	Not significant
3	Extreme temperatures	Extreme temperatures result in unsuitable conditions for certain construction activities causing delays in construction.		•		Construction disruption	Rare	Minor	Low	Rare	Minor	Low	Contractor to monitor weather and plan works accordingly	Contractor	Rare	nsignificant	-ow		Insignificant	-ow L	Not significant
4	Extreme rainfall	Extreme rainfall results in flooded areas and unsuitable conditions for certain construction activities causing delays in construction.		•		Construction disruption	Rare	Minor	Low	Unlikely	Minor	Low	Contractor to monitor weather and plan works accordingly	Contractor	Rare	Minor	Low	Unlikely F	Minor	Low	Not significant
Opera	1								1												
5	Extreme heat	Extreme heat causes overheating of electrical equipment, as well as heat damage to electrical infrastructure.				Asset damage	Rare	Minor	Low	Unlikely	Minor	Low	Designed to Irish building standards; designed to withstand a range of temperatures Infrastructure is to be maintained and monitored for degradation due to extreme temperatures	Designer, Operator	Rare	Minor	Low	Unlikely	Minor	Low	Not significant
6	Extreme heat	Extreme heat leads causes heat stress for maintenance workers.			•	Health and safety	Rare	Minor	Low	Rare	Minor	Low	Maintenance work to be scheduled to avoid unfavourable weather	Operator	Rare	Insignificant	Low	Rare	Insignificant	Low	Not significant

7	Extreme rainfall	Extreme rainfall event leads to flooding which can damage substations and underground cables, disrupting electricity connection.	•	Asset damage / engineering / operational Health and safety	Rare	Moderate	Medium	Unlikely	Moderate	Medium	Flood protection designed to withstand 1:1000 year flood	Designer	Rare	Minor	≥	Unlikely Minor	Low	Not significant
8	Extreme weather events (e.g. storms)	Extreme weather events such as storms cause damage to overhead lines disrupting electricity connection.	•	Asset damage / engineering / operational Health and safety	Rare	Moderate	Medium	Unlikely	Moderate	Medium	Designed to Irish building standards; design takes into consideration wind loadings. Emergency procedures are to be implemented against extreme weather events	Designer, Operator	Rare	Minor	Low	Unlikely Minor	Low	Not significant

## **Gas Connection Corridor**

#### Initial Risk

RISK	IDENTIFICATIO	Ν					IN	TIAL F	RISK				SIGNIFICANCE
Risk	Climate	Risk statement	Rece	ptors		Impact type	Initia	al risk	rating				Significance
ID	variable							;P4.5 )41-20(	60)		P8.5 41-206	0)	
			Gas Connection Corridor	Construction assets, plant and equipment	Staff and visitors on-site		Likelihood	Consequence	Risk rating	Likelihood	Consequence	Risk rating	
Const	ruction												
1	Extreme weather events (e.g storms)	Extreme weather events (e.g. storms) result in an inaccessible construction site or health and safety risk to workers, causing restricted working hours and a delay in operations.		•	•	Construction disruption Health and safety	Rare	Minor	Low	Unlikely	Minor	Low	Not significant
2	Extreme weather events (e.g storms)	Extreme weather events (e.g. storms) cause damage to construction materials, plant, and equipment.		•		Construction asset damage	Rare	Moderate	Medium	Unlikely	Moderate	Medium	Not significant
3	Extreme temperatures	Extreme temperatures result in unsuitable conditions for certain construction activities causing delays in construction.		•		Construction disruption	Rare	Minor	Low	Rare	Minor	Low	Not significant
4	Extreme rainfall	Extreme rainfall results in flooded areas and unsuitable conditions for certain construction activities causing delays in construction.		•		Construction disruption	Rare	Minor	Pow	Unlikely	Minor	Low	Not significant
Opera	tion	·				·				•	·	·	·
5	Extreme heat	Extreme heat leads causes heat stress for maintenance workers.			•	Health and safety	Rare	Minor	Low	Rare	Minor	Low	Not significant
6	Extreme rainfall	Extreme rainfall event leads to flooding which can damage underground pipelines, disrupting gas supply.				Asset damage / engineering / operational Health and safety	Rare	Moderate	Medium	Unlikely	Moderate	Medium	Not significant

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## **Residual Risk**

RISK I	DENTIFICATIO	N					INIT	IAL RI	SK				MITIGATION MEASURES								SIGNIFICANCE
Risk	Climate	Risk statement	Rece	eptors		Impact type	Initial	risk ra	ting				Embedded Mitigation Measures	Responsibility	Resi	dual ri	sk rat	ing			Significance
D	variable						RCF 206	24.5 (20 0)	)41-		P8.5 41-206	50)			RCP 2060	4.5 (20 )	41-		CP8.5 041-20		
			Gas Connection Corridor	Construction assets, plant and equipment	Staff and visitors on-site		Likelihood	Consequence	Risk rating	Likelihood	Consequence	Risk rating			ikelihood	Consequence	Risk rating	ikelihood	Consequence	Risk rating	
onst	ruction	<u> </u>	<u> </u>	<u> </u>	I	I		<u> </u>	I	<u> </u>	<u> </u>	I	I							Ľ	l
	Extreme weather events (e.g storms)	Extreme weather events (e.g. storms) result in an inaccessible construction site or health and safety risk to workers, causing restricted working hours and a delay in operations.		•	•	Construction disruption Health and safety	Rare	Minor	Low	Unlikely	Minor	Low	Contractor to monitor weather and plan works accordingly	Contractor	Rare	Minor	Low	Unlikely	Minor	Low	Not significant
	Extreme weather events (e.g storms)	Extreme weather events (e.g. storms) cause damage to construction materials, plant, and equipment.		•		Construction asset damage	Rare	Moderate	Medium	Unlikely	Moderate	Medium	Contractor to monitor weather and plan works accordingly	Contractor	Rare	Minor	MO	Unlikely	Minor	Low	Not significant
2	Extreme temperatures	Extreme temperatures result in unsuitable conditions for certain construction activities causing delays in construction.				Construction disruption	Rare	Minor	Low	Rare	Minor	Low	Contractor to monitor weather and plan works accordingly	Contractor		Insignificant	-ow				Not significant
t.	Extreme rainfall	Extreme rainfall results in flooded areas and unsuitable conditions for certain construction activities causing delays in construction.				Construction disruption	Rare	Minor	Low	Unlikely	Minor	Low	Contractor to monitor weather and plan works accordingly	Contractor	Rare	Minor	Low	cely (	Minor	Low I	Not significant
pera	tion	•			-	•			-					- •	. –	. –					-
5	Extreme heat	Extreme heat leads causes heat stress for maintenance workers.			•	Health and safety	Rare	Minor	Low	Rare	Minor	Low	Maintenance work to be scheduled accordingly to avoid unfavourable weather.	Operator	Rare	Insignificant	Low	Rare	Insignificant	Low	Not significant

6	Extreme rainfall	Extreme rainfall event leads to flooding which can damage underground pipelines, disrupting gas supply.		Asset damage / engineering / operational Health and safety	Rare	Moderate	Medium	Unlikely	Moderate	Flood protection designed to withstand 1:1000 year flood	Designer	Minor		Low I Inlikelv	Minor Low	Not significant
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