Enduring Connection Policy 2.3

Solar and Wind Constraints Report: Results for Area H1

Version 1.1

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Revision History		
Revision	**Date**	**Description**
V1.1	05.04.2024	Results have been updated to reflect the modifications made to the installed capacity within the analysis.

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Document Structure

This document is for customers wishing to see the estimated Total Dispatch Down for Area H1. For information on the study assumptions, methodology, abbreviations and terms used for the Constraint Analysis reports, please see the area non-specific Assumptions and Methodology report found on the ECP-2.3 webpage[1].

This document contains two main sections:

Section 1: Results for Area H1: outlines the area covered by this report. This section provides a network diagram of Area H1 and an overview of the results for Area H1.

Section 2: Area H1 Node Results: provides a table of results for every node in the area. This table documents the installed capacity, available energy, surplus, curtailment and constraint for every node in Area H1.

[1] https://www.eirgridgroup.com/customer-and-industry/general-customer-information/ecp-2.3-constraint-report/index.xml

Important Note

This ECP-2.3 constraints report presents an estimate of the reduction in available solar and wind generation based on the study assumptions described. The reduction in available generation has been split into three categories for the purposes of this study: surplus, curtailment and constraint.

The treatment of renewable generation under these three categories of generation reduction will be determined by the implementation of Articles 12 and 13 of the EU Regulation 2019/943[2].

The SEMC decision on the 22nd of March 2022[3] (SEM-22-009 Decision Paper on Dispatch, Redispatch and Compensation Pursuant to Regulation EU 2019/943) has been successfully challenged in the High Court ([2023] IEHC 629)). Therefore, the detailed design of the implementation of Articles 12 and 13 has yet to be finalised, and may differ from the implementation for constraints used in this study. Therefore, an assumed interpretation has been included in this study, as detailed in this report.

This report uses the term "Total Dispatch Down" to refer to the total reduction in available solar and wind generation i.e. the sum of surplus, curtailment and constraint, and is considered the key indicator for the results. However, it is important to note that the term "dispatch down" is more correctly applicable only to TSO instructions to reduce generation output from a market position, as is the case for curtailment and constraint, and is not necessarily applicable to a generator reducing its own output from its availability to a market position so that supply and demand are balanced, as is the case for surplus.

The term "non-priority" and "not-priority" generators are used synonymously in the report.

The results presented in this report are based on the simulation and modelling assumptions described. The findings are indicative only and this report should in no way be read as a guarantee as to future levels of surplus, curtailment and constraint.

For wind and solar generation, values of Total Dispatch Down that are less than 5% are rounded up to 5% by adjusting the constraints for that generator. This is consistent with the approach used in the ECP-2.1 and ECP-2.2 constraints reports. However, in the ECP-2.3 constraints report, this adjustment to constraints is applied only to non-priority generation and not to priority generation.

[2] https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32019R0943&from=NL

[3] https://www.semcommittee.com/publications/sem-22-009-decision-paper-dispatch-redispatch-and-compensation-pursuant-regulation-eu

1 Results for Area H1

1.1 Introduction

This section provides the surplus, curtailment and constraint results for Area H1 that are estimated by this analysis. There is a total of eight core ECP-2.3 studies and seven sensitivity studies (including without maintenance) presented in this report. The study scenarios and the associated assumptions can be found in the Assumptions and Methodology report. An overview and discussion of the results is provided in this Section. The surplus, curtailment and constraint results for each node in Area H1 are provided in Section 2 of this report.

1.2 Study Notes

A list of the major study assumptions is provided in the Assumptions and Methodology report. For Area H1, there are a number of key assumptions which drive the results, including network outages and capacity factors. These are thus reiterated here. Similarly, it is worth highlighting again the differences between the various components of Total Dispatch Down.

1.2.1 Network Outages

The scenarios in this report are intended to give a view of average long-term levels of surplus, curtailment and constraint, subject to installed generation, demand, interconnection, operational constraints and reinforcement delivery.

The ECP-2.3 constraints forecast analysis applies a similar transmission outage schedule to the ECP-2.2 constraints analysis. This was kept consistent with last year's schedule following positive feedback from industry. This schedule allows a representation of outage impact in each geographical area to be included in the studies.

This representative transmission outage schedule is given in Appendix A of the Assumptions and Methodology report. However, at times, longer duration outages may be required for certain connections, reinforcement works or forced outages, these are not considered in this analysis and may result in higher wind and solar constraints.

1.2.2 Benefit of Capacity Factor

In practice, a specific windfarm may be located at a site with higher wind speeds or may have a better performing type of wind turbine; the result is a higher capacity factor than neighbouring windfarms. This report does not reflect this localised diversity between windfarm sites. In reality, a windfarm with a higher capacity factor may see lower percentage surplus, curtailment or constraint levels than an adjacent windfarm with a lower capacity factor. This is because at times of medium or low wind speed, the high-capacity factor windfarm can generate power when the low-capacity factor windfarm cannot.

1.2.3 Notes on Surplus, Curtailment and Constraint Modelling

1.2.3.1 Surplus

During generation reduction for surplus, a distinction is made between the treatment of priority and non-priority renewable generators, with non-priority generators being dispatched down ahead of priority generators. Within these two categories of generation, surplus is applied pro-rata across the all-island system for all renewable generators in the category.

For any hour of the study, the surplus level will depend on system demand and interconnector flow capacity. In general, surplus is expected to increase with increasing installed renewable capacity.

It is expected that the further interconnection of the all-Ireland network with mainland UK and Europe will decrease the frequency of surplus conditions occurring.

In general, increased interconnector capacity with mainland UK through the EWIC & LirIC projects will not necessarily eliminate surplus generation as solar and wind profiles in mainland UK will largely be in line with those in Ireland. In the Future Grid study year however, when both the Celtic and 2nd Ireland-France interconnectors are connected, there will be a greater export capacity during times of abundant renewable generation to mainland Europe where similar wind and solar generation in Ireland and mainland Europe is not expected.

Therefore, dispatch down due to surplus generation is not expected to occur as frequently once both the Celtic and 2nd Ireland-France interconnectors are connected.

1.2.3.2 Curtailment

In this report, for each hour of the study, the curtailment is shared pro-rata on a system-wide basis with no distinction made between priority and non-priority generators. This means that both curtailment reductions and curtailment increases are shared system wide.

Solar generation has different reported levels of curtailment compared to wind due to different capacity factors and annual profile shapes.

The applied curtailment is broadly constant across the system. However, due to differences in wind and solar profiles and capacity factors between areas, the percentage average curtailment differs between areas.

1.2.3.3 Constraints

During the constraint of renewable generation, a distinction is made between priority and non-priority generators, with non-priority generators being dispatched down ahead of priority generators across the relevant transmission nodes within the subgroup. More details on the approach assumed in this study for the application of constraints on priority and non-priority renewable generation can be found in the main ECP 2.3 Assumptions and Methodology report.

In general, there is a tendency for renewable bulk power to flow towards the demand in Dublin and the interconnectors. These flow patterns are relevant when seeking to understand constraint apportionment in the simulation.

When presented as percentage values, the constraint results look different for solar and wind, as they have a low correlation due to different profile shapes driven by weather patterns.

1.3 Generation Overview

A detailed system-level overview of the renewable generation scenarios used in these studies is given in Section 2 of the area non-specific Assumptions and Methodology report. The distribution of generation in each scenario based on technology, area and node is given in Appendix B of the Assumptions and Methodology report. The node-level installed wind and solar generation for Area H1 in the "ECP" scenario is given in Table 1-1.

Node	SO	Status	Solar	Wind
Ahane	DSO	due to connect	8	
Ballydine	DSO	due to connect	6	
Barrymore	DSO	due to connect	20	
Barrymore	DSO	connected		32
Cahir	DSO	due to connect	34	
Cauteen	DSO	due to connect	48	
Cauteen	TSO	due to connect	55	
Cauteen	DSO	connected		178
Doon	DSO	due to connect	25	
Ikerrin	DSO	connected		36
Kill Hill	TSO	connected		36
Killonan	DSO	due to connect		84
Lisheen	TSO	due to connect	76	
Lisheen	TSO	connected		29
Lisheen	DSO	connected		40
Lisheen	TSO	connected		59
Mothel	TSO	due to connect	60	
Nenagh	DSO	due to connect	4	
Nenagh	DSO	connected		14
Thurles	DSO	due to connect	40	
Thurles	DSO	connected		35
Thurles	DSO	connected		7
Timoney	TSO	due to connect	157	
Tipperary	DSO	due to connect	4	
Tipperary	DSO	connected		5
Total			537	555

Table 1-1 Wind and Solar Generation Summary in Area H1 for Generation Scenario "ECP"

Table 1-2 and Table 1-3 show installed solar and wind generation for Ireland and Area H1, and the available solar and wind generation for Area H1 for each generation scenario.

Solar	Initial	33%	66%	ECP	ECP + 3.1 GW offshore	ECP + 5 GW offshore
Installed Ireland (MW)	1563	3052	4542	6031	6031	6031
Installed Area H1 (MW)	68	224	380	537	537	537
Installed Controllable Area H1 (MW)	68	224	380	537	537	537
Available Controllable Area H1 (GWh)	80	263	446	628	628	628

Table 1-2- Installed MW and Available GWh for Area H1 – Solar

Wind	Initial	33%	66%	ECP	ECP + 3.1 GW offshore	ECP + 5 GW offshore
Installed Ireland (MW)	5144	5734	6324	6913	9987	11913
Installed Area H1 (MW)	554	554	554	554	554	554
Installed Controllable Area H1 (MW)	529	529	529	529	529	529
Available Controllable Area H1 (GWh)	1673	1673	1673	1662	1662	1662

Table 1-3 - Installed MW and Available GWh for Area H1 – Wind

1.4 Network Overview

Area H1, in the south of the country, includes a mix of wind and solar generation. A summary of this generation is given in Table 1.1.

The transmission network in Area H1 and the surrounding areas is shown in Figure 1-1. The 400 kV circuits are shown in red, the 220 kV circuits in green and the 110 kV circuits in black. Possible future transmission stations and lines for the connection of new generation are also shown on the map below.

Figure 1-1 Network Map for Area H1

In most study years, there is a tendency for renewable power to flow toward the demand at Dublin and toward the interconnectors. These flow patterns are relevant when seeking to understand constraint apportionment in the simulation.

There is a tendency within Area H1 for some 110 kV nodes to see higher constraints than others. The model is demonstrating that it is more efficient to constrain generation at some locations in Area H1 than at others. Additionally, when any one section in the meshed 110 kV circuit in the area is lost, it creates overloading in other sections.

For this report, constraints in the model are optimised on a system basis. This means that the constraints in Area H1 are caused both by local and by wider system considerations. So, in theory, an increase in the installed generation in another area could increase constraints in Area H1.

In addition to the power flows out of Area H1, there are also power flows across Area H1. Renewable power from Cork and Kerry will flow east across the transmission network - some of this power will flow through H1.

Also, the power flowing out of Area H1 will meet and join with power flowing from other areas, as they flow towards the demand at Dublin. The transmission bottleneck between Area H1 and Dublin is shared with power coming from other areas.

Generators in Area H1 have been grouped into a single subgroup in this report. Further detail on Area H1 subgroup can be found in Section 1.6.4 .

The constraints are reduced in the Future Grid scenario as a result of network reinforcements which are assumed in place by 2030. These reinforcements alleviate some of the bottlenecks and reduce the overall network constraints in the area.

1.5 Future Grid Sensitivity Scenario

In line with the ECP-2.1 and ECP-2.2 studies, and in response to feedback from industry, the Future Grid scenario is included in the analysis. All reasonable efforts have been made to align the network assumptions in the Future Grid scenario to the Shaping Our Electricity Future (SOEF) 1.1 Roadmap. The network projects included in the study are given in Appendix A of the Assumptions and Methodology report found on the ECP-2.3 webpage. Additionally, any project that has progressed to stage three of the six stage project planning process after the publication of the SOEF 1.1 Roadmap are also included in the Future Grid studies. Note however, that the wind and solar generation portfolio in the ECP-2.3 Future Grid scenario differs from the wind and solar portfolio considered in the SOEF 1.1 Roadmap. This is done to maintain alignment with the ECP-2.3 process. The ECP study scenario includes all wind and solar projects which have applied through connection processes, whereas the SOEF 1.1 study includes generators up to and including ECP-2.3 applicants and then scaled renewable generation capacity to achieve the capacity volumes stated in the Climate Action Plan 23.

The Future Grid study includes a base renewable generation scenario (ECP), along with three sensitivity generation scenarios (ECP + 3.1 GW offshore, ECP + 5 GW offshore and a maintenance sensitivity study). The scenarios with additional offshore wind have been included to show the potential impact of increasing offshore wind on Total Dispatch Down levels.

The demand modelled for the Future Grid scenario is based on the medium demand scenario for 2030 as published in the All-Island Generation Capacity Statement 2023-2032.

The purpose of the Future Grid scenario is to provide insights on the potential impact of the SOEF 1.1 Roadmap network reinforcement portfolio on the dispatch down of wind and solar generators. This study is not intended to be exhaustive; it is not intended to remove all transmission constraints and it does not give individual generators guarantee that their Total Dispatch Down will change to the estimated levels.

1.6 Area H1 – Average Results

The Total Dispatch Down results for Area H1 are provided below in Table 1-5 to Table 1-7 and Figure 1-3 to Figure 1-5. These include the breakdown between surplus, curtailment and constraint. The Total Dispatch Down percentages are based on the total available energy. The Total Dispatch Down is the sum of surplus, curtailment and constraint. The node level breakdown of surplus, curtailment and constraint are given in Section 2. The results show that the system level Total Dispatch Down increases with additional installed capacity due to a significant increase in surplus. However, the Total Dispatch Down reduces when the 2028 studies are compared with 2026 and there is a further reduction in the Future Grid scenario owing to increased demand, network reinforcement, interconnection and relaxed system level operational limits.

For each generation type in Area H1 (solar non-priority, wind non-priority and wind priority), the total installed capacity in MW and total available generation in GWh are given in Table 1-5, Table 1-6 and Table 1-7. The total generation in GWh after dispatch down and the corresponding percentage Total Dispatch

Down are also included in the tables for each scenario. Details on the generation and network scenarios are given in Section 2 of the Assumptions and Methodology report.

1.6.1 Offshore Wind Sensitivity Studies

Results for the offshore wind-based sensitivity studies are included, along with results for the core scenarios. The general trend is that with increasing levels of offshore wind, Total Dispatch Down increases due to significant increases in the available wind energy, which in turn leads to increased levels of surplus.

1.6.2 Impact of Article 12 and 13

Higher Total Dispatch Down is observed for non-priority generators due to the impact of the implementation of Article 12 and 13 in the studies, which results in non-priority generators being reduced ahead of priority generators for surplus and constraint reasons. More detail on the Article 12 clause is available in Section 3.6 of the Assumptions and Methodology report.

Another factor that contributes to the higher total dispatch down for non-priority wind and solar units is the proportion of priority to non-priority units within a subgroup. If a subgroup has a high volume of priority wind/solar units to non-priority wind/solar units, this can result in the constraints that would usually be allocated to the priority units only allocated to the non-priority units (due to the grandfathering of constraints). This can result in high constraints for non-priority units within a subgroup.

1.6.3 Future Grid Sensitivity Study

The results of the Future Grid scenario show a notable reduction in Total Dispatch Down over the core study years (2026 and 2028) due to the impact of the SOEF 1.1 Roadmap network reinforcements, increased demand levels, increased interconnection, and the relaxation of operational constraints. However, increases in installed wind and solar generation, as seen in the offshore wind scenarios, result in rising surplus levels, causing an increase in Total Dispatch Down levels. A detailed breakdown of the Total Dispatch Down components for Area H1 under the Future Grid scenarios and associated sensitivity case is given in Table 1-5 to Table 1-7. Further node level details can be viewed in Section 2.

1.6.4 Area Subgroups

The constraint forecast study, which is performed using PLEXOS software, applies mathematical optimisation to find the lowest cost generator dispatch schedule to meet demand, subject to a number of system and transmission level constraints. To ensure the model is impartial, the assumptions on the cost of renewable generators remain the same, irrespective of technology or location, and are always lower than that of conventional plants. This ensures renewable generators are given priority in the PLEXOS optimisation. However, due to network congestion caused by line limits and N-1 contingency security checks, the power flows in certain lines are limited, causing dispatch down in RES generators which may affect one generator or multiple generators chosen by PLEXOS' internal logic. During various initial studies, it was observed that PLEXOS may repeatedly choose the same generator(s) to dispatch down to manage an issue in a region shared by multiple generators.

There is often a post-processing step between the PLEXOS simulation and this report to ensure an appropriate allocation of constraints among generators sharing the bottlenecks. This is done by creating constraint subgroups within an area or spanning multiple different areas. The subgroups are selected based on an assessment of the raw PLEXOS results and based on our experience of dispatch down on the real system. The subgroups are chosen to group those generators into a constraint group that are expected to experience similar constraint levels. The subgroups are selected on the basis that they share a common transmission bottleneck, or they are electrically close to a congested area within the network.

Area H1 is a meshed 110 kV network connecting to four different 220 kV stations and is negatively affected by the loss of any section of 110 kV circuit. The area is also sensitive to the loss of neighbouring 110 kV and 220kV circuits in adjacent areas. The contingencies and overloaded lines associated with the area are

included in Appendix C of the ECP-2.3 Assumptions and Methodology report. Additionally, increased levels of congestion on the circuits in neighbouring areas causes greater levels of congestion in Area H1.

Analysis of Area H1 identified one constraint subgroup for solar and wind generation. The subgroup nodes are given in Table 1- . The constraints are shared on a pro-rata basis amongst the non-priority generators in the subgroup ahead of priority generators. The individual node level dispatch down is given in Section 2.

Subgroup	Nodes
H1	Ahane
	Ballydine
	Barrymore
	Cahir
	Cauteen
	Doon
	Ikerrin
	Kill Hill
	Killonan
	Lisheen
	Mothel
	Nenagh
	Thurles
	Timoney
	Tipperary

Table 1-4 Area H1 generator nodes and their subgroups

Figure 1-2 Subgroup H1 (subgroups outlined by blue dashed line)

The solar non-priority data is given in the following table.

Area H1 (H1)	Year	Initial	33%	66%	ECP	ECP + 3.1 GW offshore	ECP + 5 GW offshore
Installed Capacity (MW)	2026	68	224	380	537		
Installed Capacity (MW)	2028	68	224	380	537	537	
Installed Capacity (MW)	2030				537	537	537
Available Energy (GWh)	2026	79	262	445	628		
Available Energy (GWh)	2028	80	263	446	629	629	
Available Energy (GWh)	2030				628	628	628
Generation (GWh)	2026	74	236	388	500		
Generation (GWh)	2028	76	244	404	523	484	
Generation (GWh)	2030				537	533	511
Surplus (%)	2026	1 %	2 %	5 %	9 %		
Surplus (%)	2028	<1 %	<1 %	2 %	5 %	11 %	
Surplus (%)	2030				2 %	6 %	10 %
Curtailment (%)	2026	1 %	1 %	2 %	4 %		
Curtailment (%)	2028	<1 %	1 %	1 %	2 %	3 %	
Curtailment (%)	2030				1 %	1 %	1 %
Constraint (%)	2026	6 %	6 %	5 %	8 %		
Constraint (%)	2028	5 %	6 %	6 %	10 %	8 %	
Constraint (%)	2030				12 %	8 %	7 %
Total Dispatch Down (%)	2026	7 %	10 %	13 %	21 %		
Total Dispatch Down (%)	2028	5 %	7 %	9 %	17 %	23 %	
Total Dispatch Down (%)	2030				14 %	15 %	19 %

Table 1-5 - Surplus, Curtailment and Constraint for Solar Non-priority in Area H1 (H1)

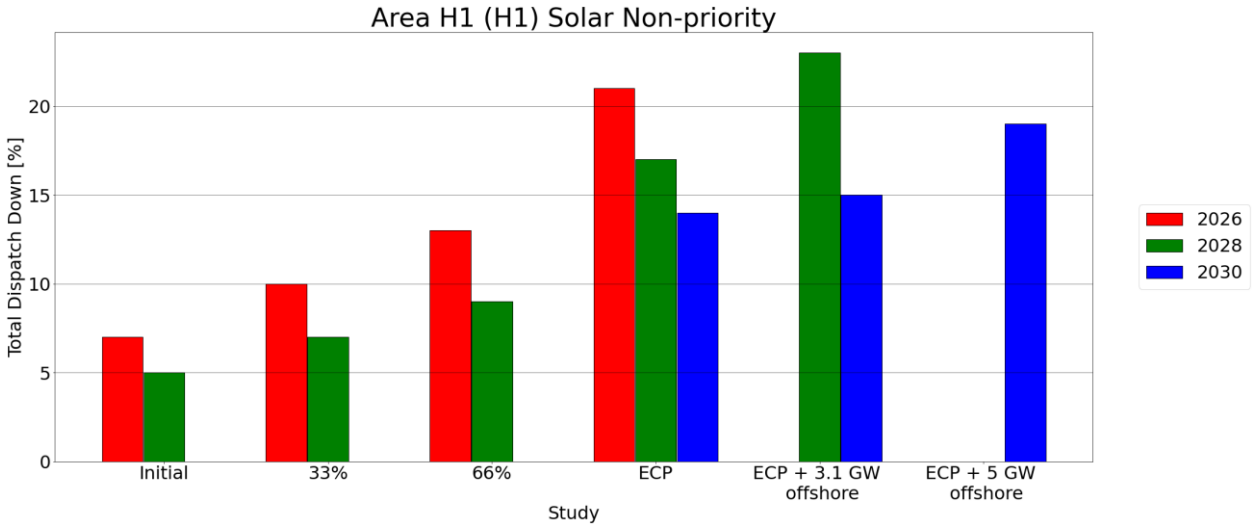

Figure 1-3 - Results Solar Non-priority Area H1 (H1)

The wind non-priority data is given in the following table.

Area H1 (H1)	Year	Initial	33%	66%	ECP	ECP + 3.1 GW offshore	ECP + 5 GW offshore
Installed Capacity (MW)	2026	113	113	113	113		
Installed Capacity (MW)	2028	113	113	113	113	113	
Installed Capacity (MW)	2030				113	113	113
Available Energy (GWh)	2026	355	355	355	355		
Available Energy (GWh)	2028	357	357	357	357	357	
Available Energy (GWh)	2030				355	355	355
Generation (GWh)	2026	266	247	230	202		
Generation (GWh)	2028	279	250	216	186	75	
Generation (GWh)	2030				323	288	248
Surplus (%)	2026	2 %	5 %	10 %	15 %		
Surplus (%)	2028	<1 %	1 %	3 %	6 %	23 %	
Surplus (%)	2030				2 %	12 %	23 %
Curtailment (%)	2026	2 %	3 %	4 %	5 %		
Curtailment (%)	2028	<1 %	1 %	2 %	3 %	5 %	
Curtailment (%)	2030				1 %	2 %	2 %
Constraint (%)	2026	21 %	22 %	21 %	23 %		
Constraint (%)	2028	21 %	28 %	35 %	39 %	51 %	
Constraint (%)	2030				6 %	5 %	5 %
Total Dispatch Down (%)	2026	25 %	30 %	35 %	43 %		
Total Dispatch Down (%)	2028	22 %	30 %	40 %	48 %	79 %	
Total Dispatch Down (%)	2030				9 %	19 %	30 %

Table 1-6 - Surplus, Curtailment and Constraint for Wind Non-priority in Area H1 (H1)

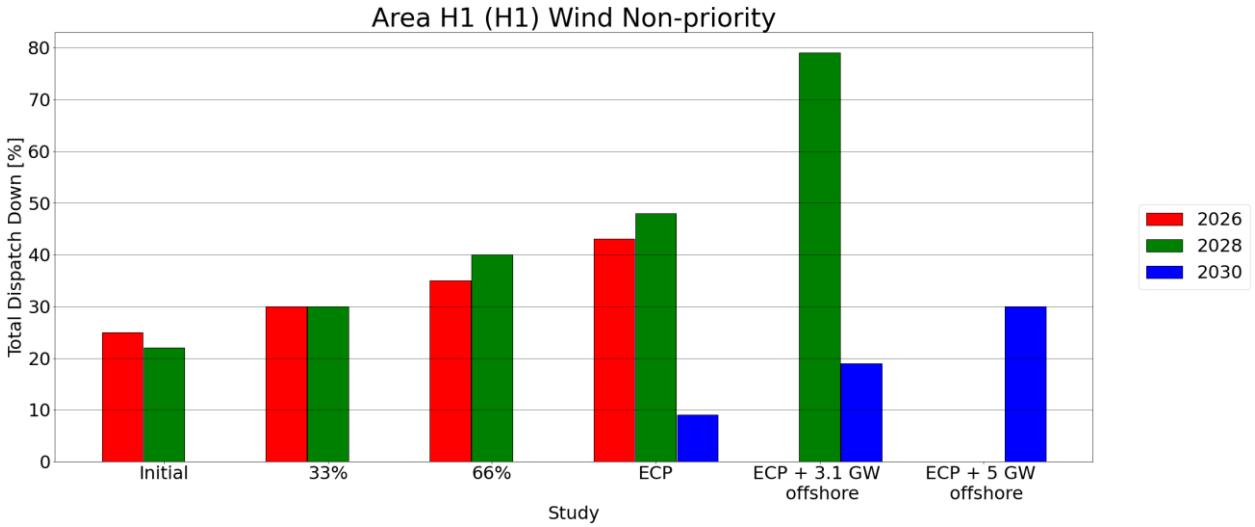

Figure 1-4 - Results Wind Non-priority Area H1 (H1)

The wind priority data is given in the following table.

Area H1 (H1)	Year	Initial	33%	66%	ECP	ECP + 3.1 GW offshore	ECP + 5 GW offshore
Installed Capacity (MW)	2026	416	416	416	416		
Installed Capacity (MW)	2028	416	416	416	416	416	
Installed Capacity (MW)	2030				416	416	416
Available Energy (GWh)	2026	1307	1307	1307	1307		
Available Energy (GWh)	2028	1316	1316	1316	1316	1316	
Available Energy (GWh)	2030				1307	1307	1307
Generation (GWh)	2026	1275	1255	1232	1212		
Generation (GWh)	2028	1312	1299	1284	1265	1214	
Generation (GWh)	2030				1299	1231	1260
Surplus (%)	2026	<1 %	<1 %	<1 %	<1 %		
Surplus (%)	2028	<1 %	<1 %	<1 %	<1 %	<1 %	
Surplus (%)	2030				<1 %	<1 %	<1 %
Curtailment (%)	2026	2 %	4 %	6 %	7 %		
Curtailment (%)	2028	<1 %	1 %	2 %	4 %	8 %	
Curtailment (%)	2030				1 %	6 %	4 %
Constraint (%)	2026	<1 %	<1 %	<1 %	<1 %		
Constraint (%)	2028	<1 %	<1 %	<1 %	<1 %	<1 %	
Constraint (%)	2030				<1 %	<1 %	<1 %
Total Dispatch Down (%)	2026	2 %	4 %	6 %	7 %		
Total Dispatch Down (%)	2028	<1%	1 %	2 %	4 %	8 %	
Total Dispatch Down (%)	2030				1 %	6 %	4 %

Table 1-7 - Surplus, Curtailment and Constraint for Wind Priority in Area H1 (H1)

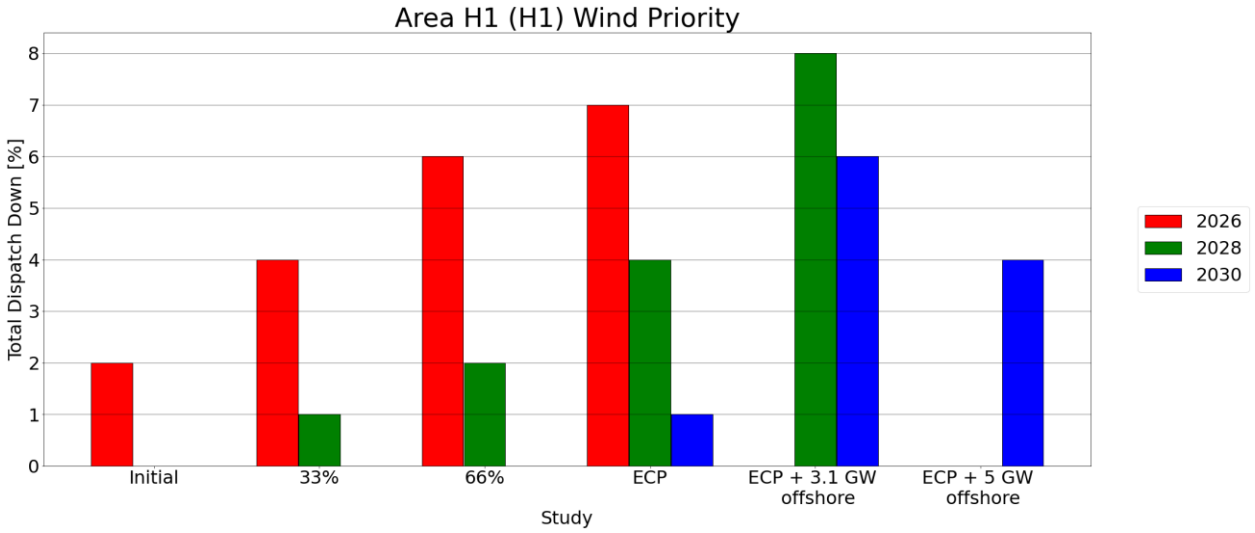

Figure 1-5 - Results Wind Priority Area H1 (H1)

1.7 Conclusion – Results for Area H1

This section provides an overview of the estimated surplus, curtailment and constraint values for Area H1 for a range of scenarios based on a number of installed generation assumptions (generation scenarios) and the study year (network and demand assumptions). The results highly depend on the study assumptions, which are described in the Assumptions and Methodology report.

Section 2 contains the detailed results consisting of available energy (GWh) and percentage surplus, curtailment, and constraint values for each node for both solar and wind in Area H1.

2 Area H1 Node Results

This section presents the results of the modelling analysis for Area H1. The levels of surplus, curtailment and constraint that controllable solar and wind generators in Area H1 might expect to experience are reported on a nodal basis for the study scenarios. Details on the generation capacity at each node are also provided along with the assumed amount of controllable generation.

This section also presents a list of the generators at each node that are included in the study.

Figure 2-0 Area H1

2.1 Ahane

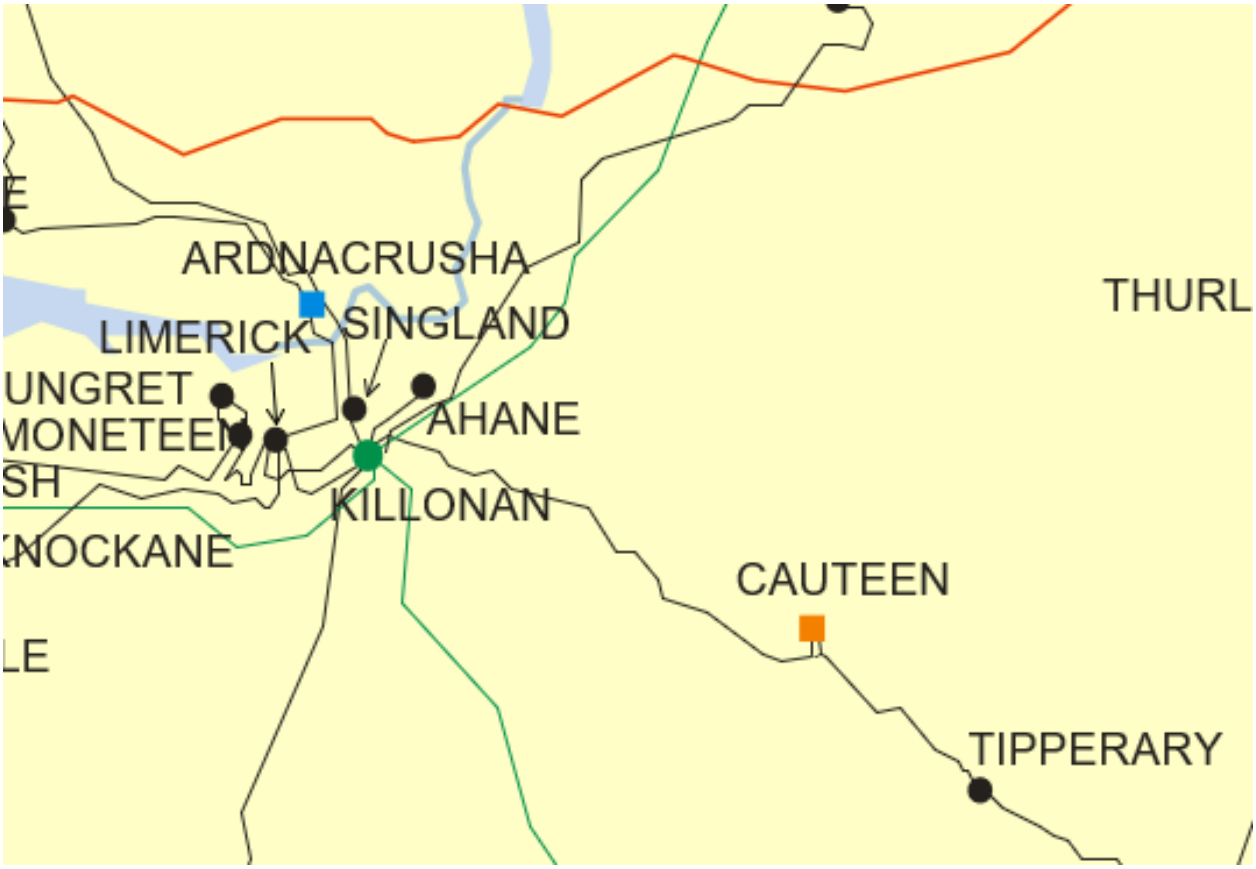

Figure 2-1 - Location of node Ahane

Generator	SO	Capacity	Type	Status
Laghtane Solar Farm	DSO	4.0	solar non-priority	due to connect
Mulkear Solar Park (formerly Clyduff Solar Park)	DSO	4.0	solar non-priority	due to connect

Table 2-1 - Generation Included in Study for Node Ahane

The solar non-priority data is given in the following table.

Area H1	Year	Initial	33%	66%	ECP	ECP + 3.1 GW offshore	ECP + 5 GW offshore
Installed Capacity (MW)	2026		3	5	8		
Installed Capacity (MW)	2028		3	5	8	8	
Installed Capacity (MW)	2030				8	8	8
Available Energy (GWh)	2026		3	6	9		
Available Energy (GWh)	2028		3	6	9	9	
Available Energy (GWh)	2030				9	9	9
Generation (GWh)	2026		3	5	7		
Generation (GWh)	2028		3	6	8	7	
Generation (GWh)	2030				8	8	8
Surplus (%)	2026		2 %	5 %	9 %		
Surplus (%)	2028		<1%	2 %	5 %	11 %	
Surplus (%)	2030				2 %	6 %	10 %
Curtailment (%)	2026		1 %	2 %	4 %		
Curtailment (%)	2028		1 %	1 %	2 %	3 %	
Curtailment (%)	2030				1 %	1 %	1 %
Constraint (%)	2026		6 %	5 %	8 %		
Constraint (%)	2028		6 %	6 %	10 %	8 %	
Constraint (%)	2030				12 %	8 %	7 %
Total Dispatch Down (%)	2026		10 %	13 %	21 %		
Total Dispatch Down (%)	2028		7 %	9 %	17 %	23 %	
Total Dispatch Down (%)	2030				14 %	15 %	19 %

Table 2-2 - Surplus, Curtailment and Constraint for Solar non-priority in Area H1

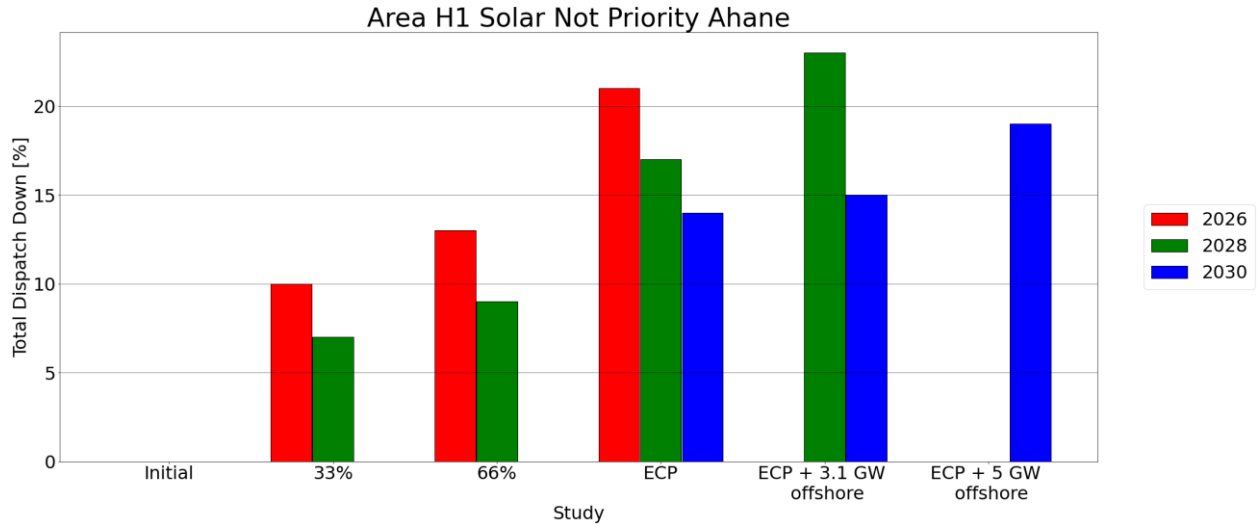

Figure 2-2 - Total Dispatch Down for Solar non-priority for Node Ahane

2.2 Ballydine

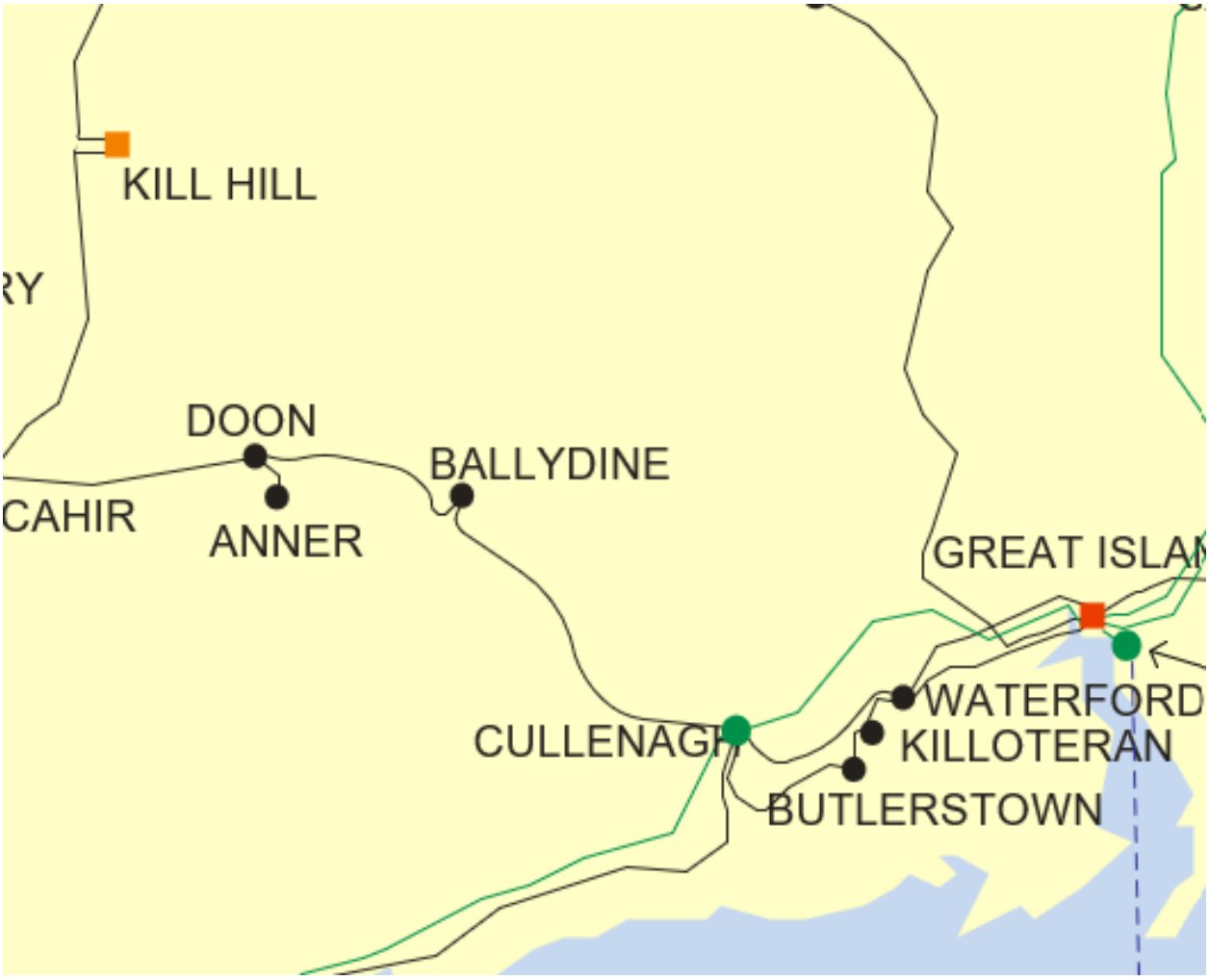

Figure 2-3 - Location of node Ballydine

Generator	SO	Capacity	Type	Status
Carrick Solar	DSO	5.8	solar non-priority	due to connect

Table 2-3 - Generation Included in Study for Node Ballydine

The solar non-priority data is given in the following table.

Area H1	Year	Initial	33%	66%	ECP	ECP + 3.1 GW offshore	ECP + 5 GW offshore
Installed Capacity (MW)	2026	6	6	6	6		
Installed Capacity (MW)	2028	6	6	6	6	6	
Installed Capacity (MW)	2030				6	6	6
Available Energy (GWh)	2026	7	7	7	7		
Available Energy (GWh)	2028	7	7	7	7	7	
Available Energy (GWh)	2030				7	7	7
Generation (GWh)	2026	6	6	6	5		
Generation (GWh)	2028	6	6	6	6	5	
Generation (GWh)	2030				6	6	6
Surplus (%)	2026	1 %	2 %	5 %	9 %		
Surplus (%)	2028	<1 %	<1%	2 %	5 %	11 %	
Surplus (%)	2030				2 %	6 %	10 %
Curtailment (%)	2026	1 %	1 %	2 %	4 %		
Curtailment (%)	2028	<1 %	1 %	1 %	2 %	3 %	
Curtailment (%)	2030				1 %	1 %	1 %
Constraint (%)	2026	6 %	6 %	5 %	8 %		
Constraint (%)	2028	5 %	6 %	6 %	10 %	8 %	
Constraint (%)	2030				12 %	8 %	7 %
Total Dispatch Down (%)	2026	7 %	10 %	13 %	21 %		
Total Dispatch Down (%)	2028	5 %	7 %	9 %	17 %	23 %	
Total Dispatch Down (%)	2030				14 %	15 %	19 %

Table 2-4 - Surplus, Curtailment and Constraint for Solar non-priority in Area H1

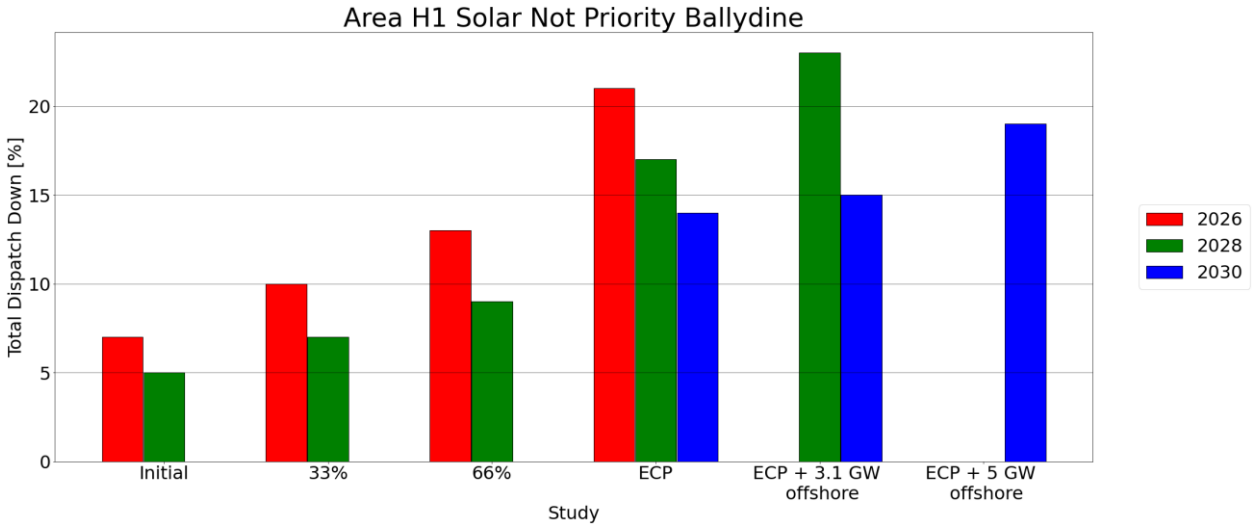

Figure 2-4 - Total Dispatch Down for Solar non-priority for Node Ballydine

2.3 Barrymore

Figure 2-5 - Location of node Barrymore

Generator	SO	Capacity	Type	Status
Barranafaddock (1)	DSO	32.4	wind priority	connected
Farran South	DSO	15.0	solar non-priority	due to connect
Farran South Solar Phase 2	DSO	5.0	solar non-priority	due to connect

Table 2-5 - Generation Included in Study for Node Barrymore

The solar non-priority data is given in the following table.

Area H1	Year	Initial	33%	66%	ECP	ECP + 3.1 GW offshore	ECP + 5 GW offshore
Installed Capacity (MW)	2026	15	17	18	20		
Installed Capacity (MW)	2028	15	17	18	20	20	
Installed Capacity (MW)	2030				20	20	20
Available Energy (GWh)	2026	18	20	21	23		
Available Energy (GWh)	2028	18	20	21	23	23	
Available Energy (GWh)	2030				23	23	23
Generation (GWh)	2026	16	18	19	19		
Generation (GWh)	2028	17	18	19	19	18	
Generation (GWh)	2030				20	20	19
Surplus (%)	2026	1 %	2 %	5 %	9 %		
Surplus (%)	2028	<1 %	<1 %	2 %	5 %	11 %	
Surplus (%)	2030				2 %	6 %	10 %
Curtailment (%)	2026	1 %	1 %	2 %	4 %		
Curtailment (%)	2028	<1 %	1 %	1 %	2 %	3 %	
Curtailment (%)	2030				1 %	1 %	1 %
Constraint (%)	2026	6 %	6 %	5 %	8 %		
Constraint (%)	2028	5 %	6 %	6 %	10 %	8 %	
Constraint (%)	2030				12 %	8 %	7 %
Total Dispatch Down (%)	2026	7 %	10 %	13 %	21 %		
Total Dispatch Down (%)	2028	5 %	7 %	9 %	17 %	23 %	
Total Dispatch Down (%)	2030				14 %	15 %	19 %

Table 2-6 - Surplus, Curtailment and Constraint for Solar non-priority in Area H1

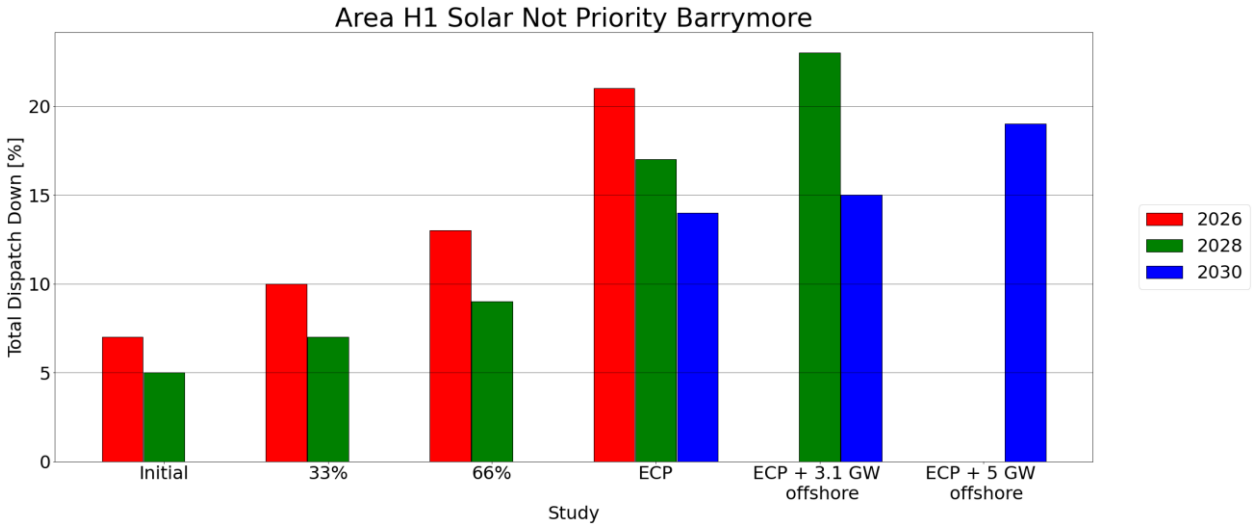

Figure 2-6 - Total Dispatch Down for Solar non-priority for Node Barrymore

The wind priority data is given in the following table.

Area H1	Year	Initial	33%	66%	ECP	ECP + 3.1 GW offshore	ECP + 5 GW offshore
Installed Capacity (MW)	2026	32	32	32	32		
Installed Capacity (MW)	2028	32	32	32	32	32	
Installed Capacity (MW)	2030				32	32	32
Available Energy (GWh)	2026	102	102	102	102		
Available Energy (GWh)	2028	103	103	103	103	103	
Available Energy (GWh)	2030				102	102	102
Generation (GWh)	2026	99	98	96	94		
Generation (GWh)	2028	102	101	100	99	95	
Generation (GWh)	2030				101	96	98
Surplus (%)	2026	<1 %	<1 %	<1 %	<1 %		
Surplus (%)	2028	<1 %	<1 %	<1 %	<1 %	<1 %	
Surplus (%)	2030				<1 %	<1 %	<1 %
Curtailment (%)	2026	2 %	4 %	6 %	7 %		
Curtailment (%)	2028	<1 %	1 %	2 %	4 %	8 %	
Curtailment (%)	2030				1 %	6 %	4 %
Constraint (%)	2026	<1 %	<1 %	<1 %	<1 %		
Constraint (%)	2028	<1 %	<1 %	<1 %	<1 %	<1 %	
Constraint (%)	2030				<1 %	<1 %	<1 %
Total Dispatch Down (%)	2026	2 %	4 %	6 %	7 %		
Total Dispatch Down (%)	2028	<1 %	1 %	2 %	4 %	8 %	
Total Dispatch Down (%)	2030				1 %	6 %	4 %

Table 2-7 - Surplus, Curtailment and Constraint for Wind priority in Area H1

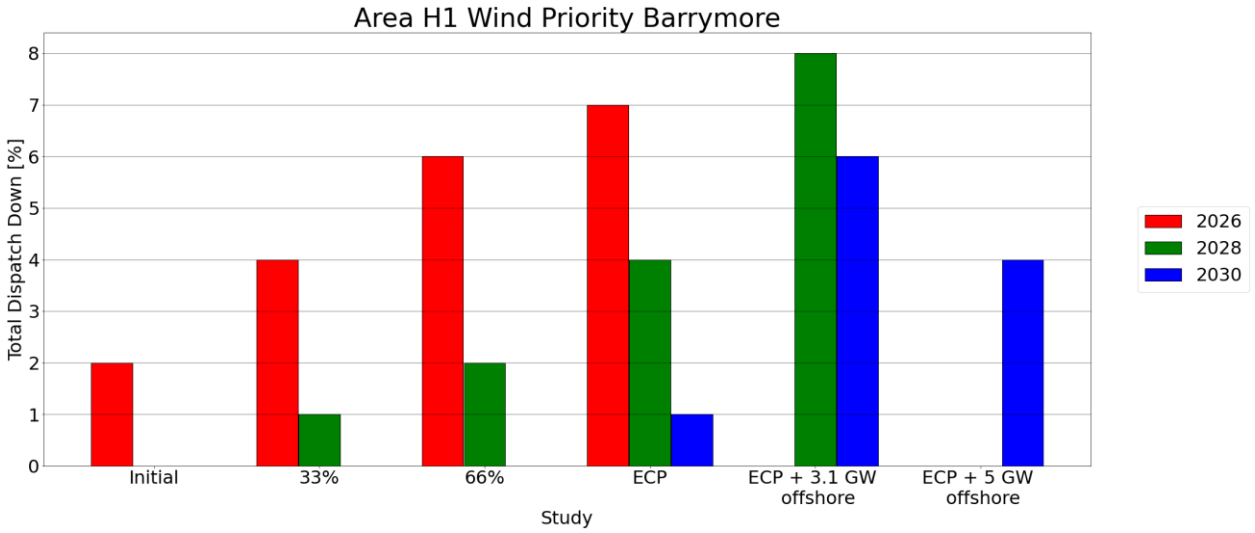

Figure 2-7 - Total Dispatch Down for Wind priority for Node Barrymore

2.4 Cahir

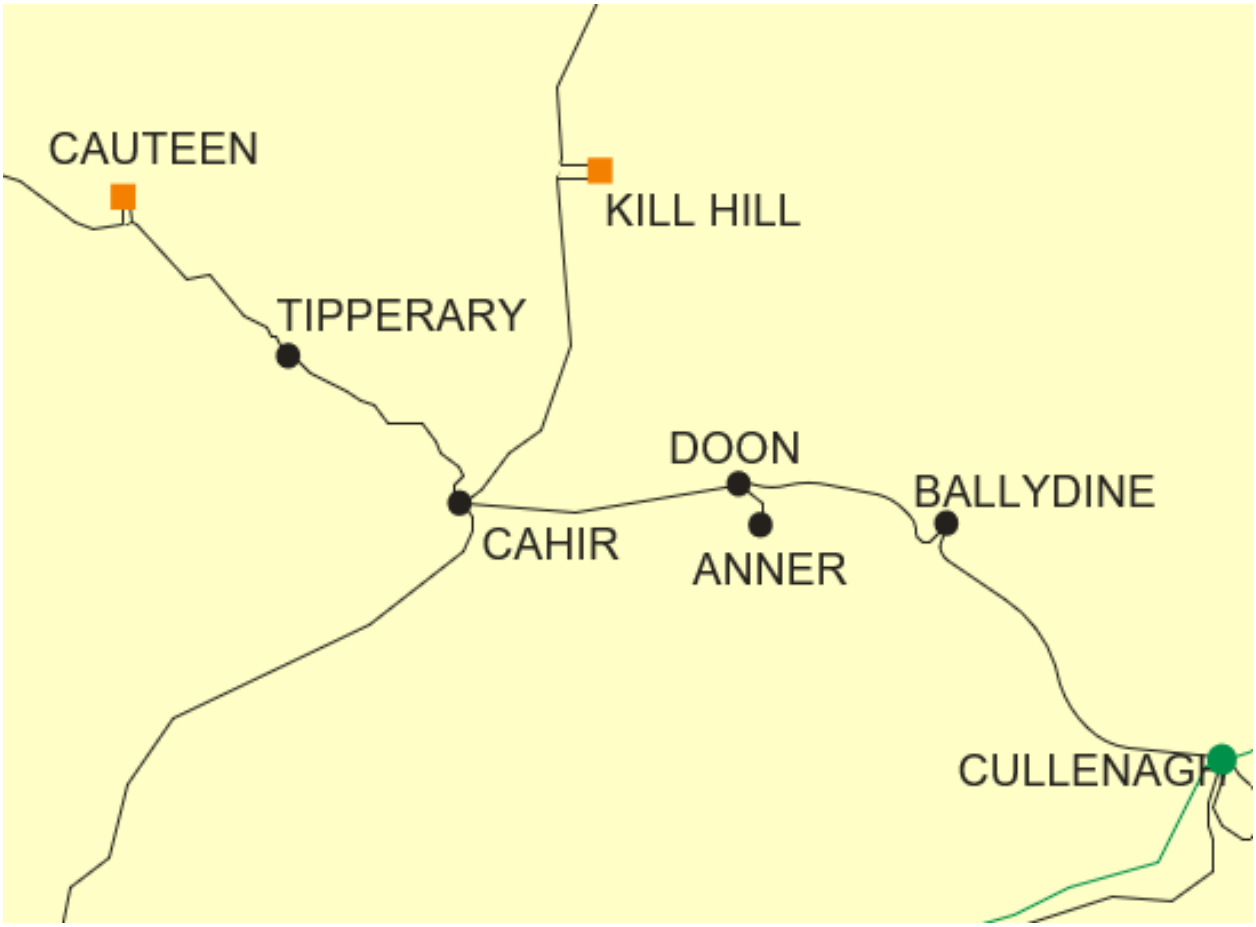

Figure 2-8 - Location of node Cahir

Generator	SO	Capacity	Type	Status
Ballymacadam (Monraha) Solar PV Farm	DSO	19.0	solar non-priority	due to connect
Farranlahassery Solar	DSO	4.0	solar non-priority	due to connect
Magherareagh Solar PV Farm	DSO	3.3	solar non-priority	due to connect
Monroe East solar from merge Ballyfowloo Lawclon	DSO	8.0	solar non-priority	due to connect

Table 2-8 - Generation Included in Study for Node Cahir

The solar non-priority data is given in the following table.

Area H1	Year	Initial	33%	66%	ECP	ECP + 3.1 GW offshore	ECP + 5 GW offshore
Installed Capacity (MW)	2026	31	32	33	34		
Installed Capacity (MW)	2028	31	32	33	34	34	
Installed Capacity (MW)	2030				34	34	34
Available Energy (GWh)	2026	36	38	39	40		
Available Energy (GWh)	2028	36	38	39	40	40	
Available Energy (GWh)	2030				40	40	40
Generation (GWh)	2026	34	34	34	32		
Generation (GWh)	2028	35	35	35	33	31	
Generation (GWh)	2030				34	34	33
Surplus (%)	2026	1 %	2 %	5 %	9 %		
Surplus (%)	2028	<1 %	<1 %	2 %	5 %	11 %	
Surplus (%)	2030				2 %	6 %	10 %
Curtailment (%)	2026	1 %	1 %	2 %	4 %		
Curtailment (%)	2028	<1 %	1 %	1 %	2 %	3 %	
Curtailment (%)	2030				1 %	1 %	1 %
Constraint (%)	2026	6 %	6 %	5 %	8 %		
Constraint (%)	2028	5 %	6 %	6 %	10 %	8 %	
Constraint (%)	2030				12 %	8 %	7 %
Total Dispatch Down (%)	2026	7 %	10 %	13 %	21 %		
Total Dispatch Down (%)	2028	5 %	7 %	9 %	17 %	23 %	
Total Dispatch Down (%)	2030				14 %	15 %	19 %

Table 2-9 - Surplus, Curtailment and Constraint for Solar non-priority in Area H1

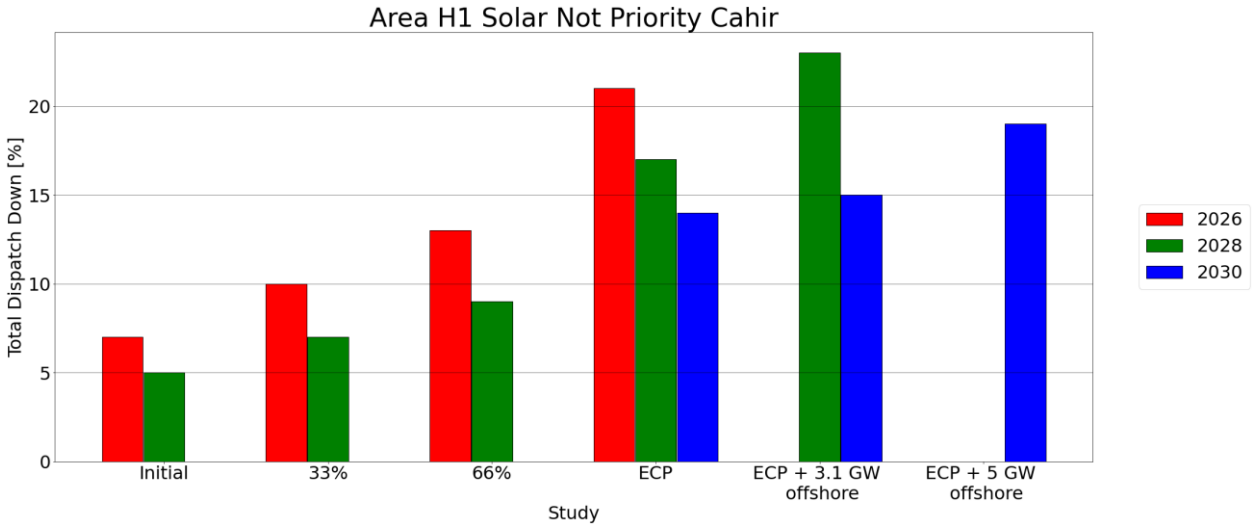

Figure 2-9 - Total Dispatch Down for Solar non-priority for Node Cahir

2.5 Cauteen

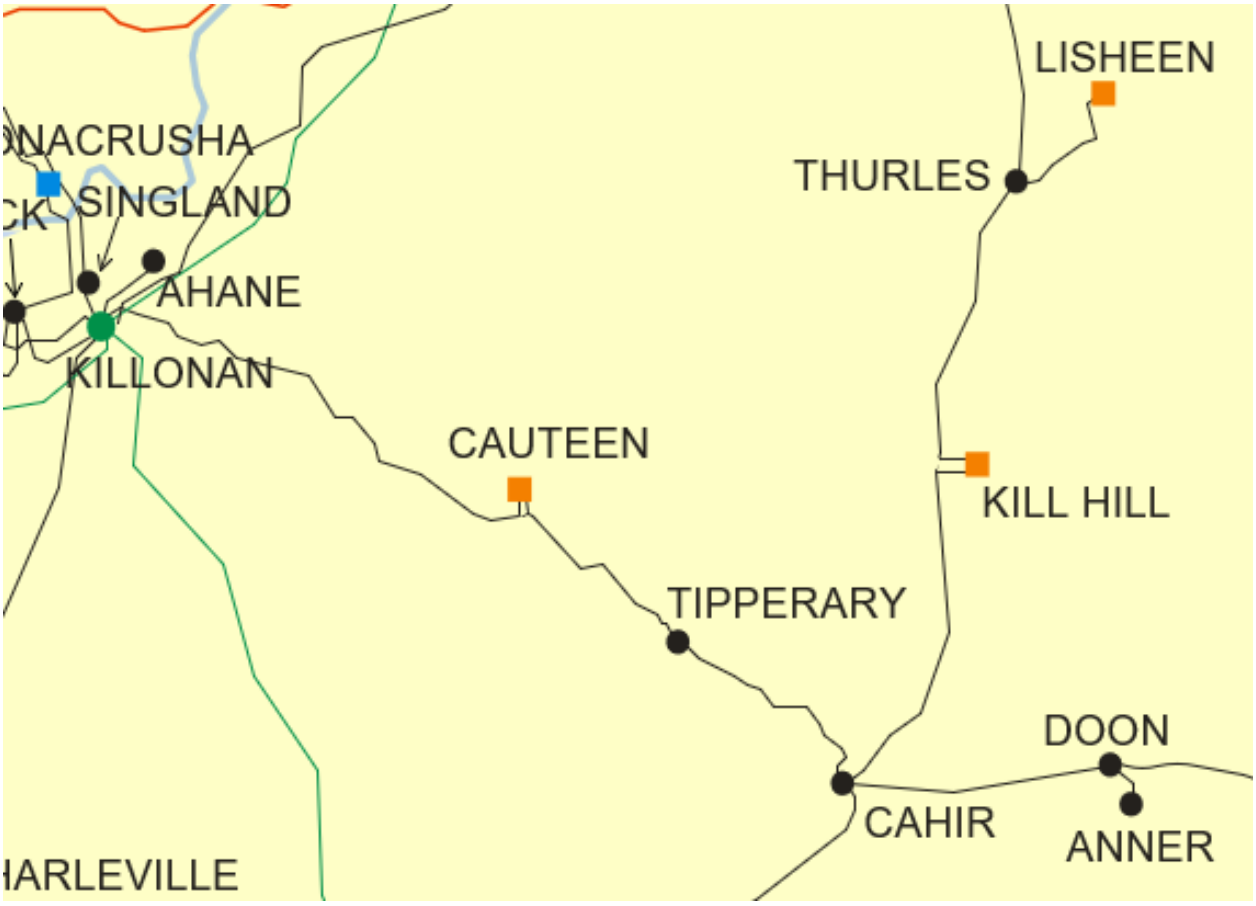

Figure 2-10 - Location of node Cauteen

Generator	SO	Capacity	Type	Status
Cappawhite A	DSO	49.08	wind priority	connected
Cappawhite A Wind Farm (Gate 2)	DSO	2.92	wind priority	connected
Cappawhite B	DSO	13.18	wind priority	connected
Garracummer (1)	DSO	36.9	wind priority	connected
Garracummer (2)	DSO	1.0	wind priority	connected
Glencarbry (1)	DSO	33.0	wind priority	connected
Glenough (1)	DSO	33.0	wind priority	connected
Holyford (1)	DSO	9.0	wind priority	connected
Gortdrum Solar PV	DSO	48.0	solar non-priority	due to connect
Barnaleen Solar Farm	TSO	55.0	solar non-priority	due to connect

Table 2-10 - Generation Included in Study for Node Cauteen

The solar non-priority data is given in the following table.

Area H1	Year	Initial	33%	66%	ECP	ECP + 3.1 GW offshore	ECP + 5 GW offshore
Installed Capacity (MW)	2026		34	69	103		
Installed Capacity (MW)	2028		34	69	103	103	
Installed Capacity (MW)	2030				103	103	103
Available Energy (GWh)	2026		40	80	121		
Available Energy (GWh)	2028		40	81	121	121	
Available Energy (GWh)	2030				121	121	121
Generation (GWh)	2026		36	70	96		
Generation (GWh)	2028		37	73	100	93	
Generation (GWh)	2030				103	102	98
Surplus (%)	2026		2 %	5 %	9 %		
Surplus (%)	2028		<1 %	2 %	5 %	11 %	
Surplus (%)	2030				2 %	6 %	10 %
Curtailment (%)	2026		1 %	2 %	4 %		
Curtailment (%)	2028		1 %	1 %	2 %	3 %	
Curtailment (%)	2030				1 %	1 %	1 %
Constraint (%)	2026		6 %	5 %	8 %		
Constraint (%)	2028		6 %	6 %	10 %	8 %	
Constraint (%)	2030				12 %	8 %	7 %
Total Dispatch Down (%)	2026		10 %	13 %	21 %		
Total Dispatch Down (%)	2028		7 %	9 %	17 %	23 %	
Total Dispatch Down (%)	2030				14 %	15 %	19 %

Table 2-11 - Surplus, Curtailment and Constraint for Solar non-priority in Area H1

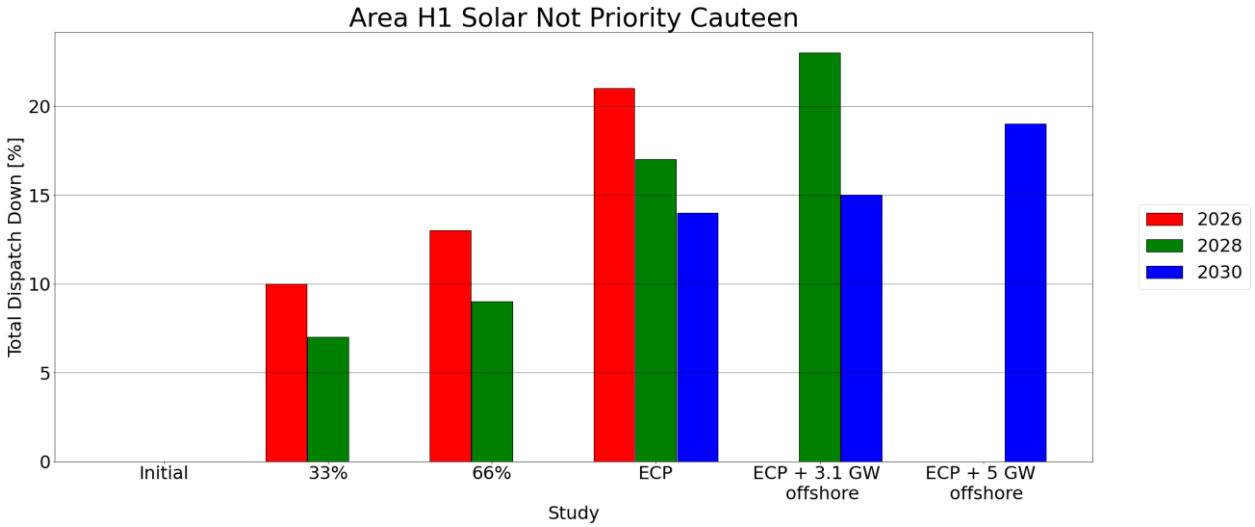

Figure 2-11 - Total Dispatch Down for Solar non-priority for Node Cauteen

The wind priority data is given in the following table.

Area H1	Year	Initial	33%	66%	ECP	ECP + 3.1 GW offshore	ECP + 5 GW offshore
Installed Capacity (MW)	2026	178	178	178	178		
Installed Capacity (MW)	2028	178	178	178	178	178	
Installed Capacity (MW)	2030				178	178	178
Available Energy (GWh)	2026	560	560	560	560		
Available Energy (GWh)	2028	563	563	563	563	563	
Available Energy (GWh)	2030				560	560	560
Generation (GWh)	2026	546	537	527	519		
Generation (GWh)	2028	562	556	550	541	520	
Generation (GWh)	2030				556	527	539
Surplus (%)	2026	<1 %	<1%	<1%	<1%		
Surplus (%)	2028	<1%	<1%	<1%	<1%	<1%	
Surplus (%)	2030				<1%	<1%	<1%
Curtailment (%)	2026	2 %	4 %	6 %	7 %		
Curtailment (%)	2028	<1%	1 %	2 %	4 %	8 %	
Curtailment (%)	2030				1 %	6 %	4 %
Constraint (%)	2026	<1%	<1%	<1%	<1%		
Constraint (%)	2028	<1%	<1%	<1%	<1%	<1%	
Constraint (%)	2030				<1%	<1%	<1%
Total Dispatch Down (%)	2026	2 %	4 %	6 %	7 %		
Total Dispatch Down (%)	2028	<1%	1 %	2 %	4 %	8 %	
Total Dispatch Down (%)	2030				1 %	6 %	4 %

Table 2-12 - Surplus, Curtailment and Constraint for Wind priority in Area H1

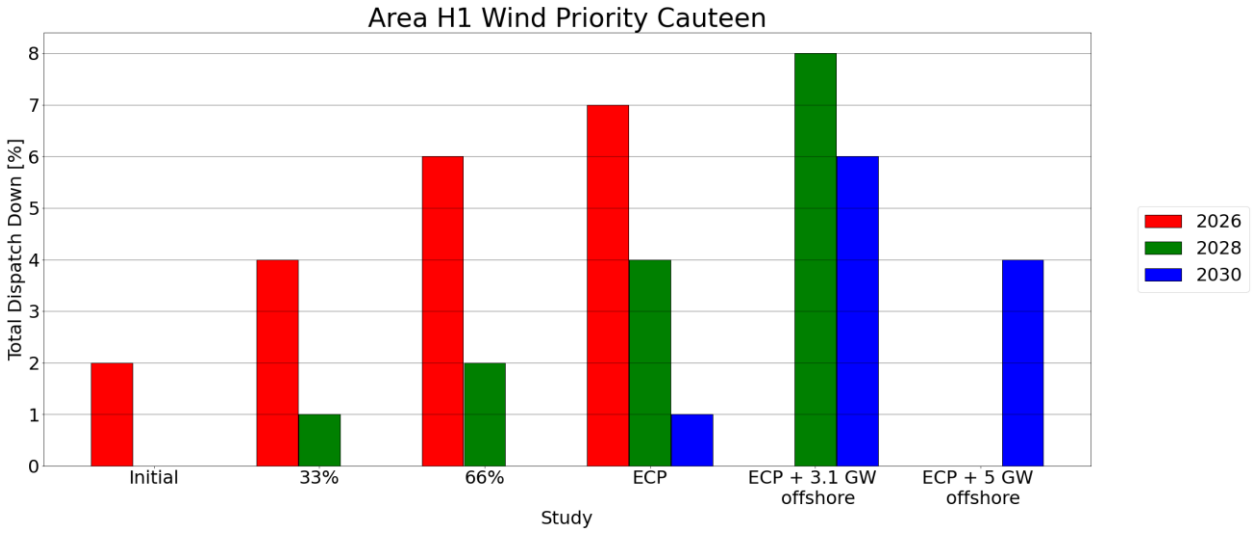

Figure 2-12 - Total Dispatch Down for Wind priority for Node Cauteen

2.6 Doon

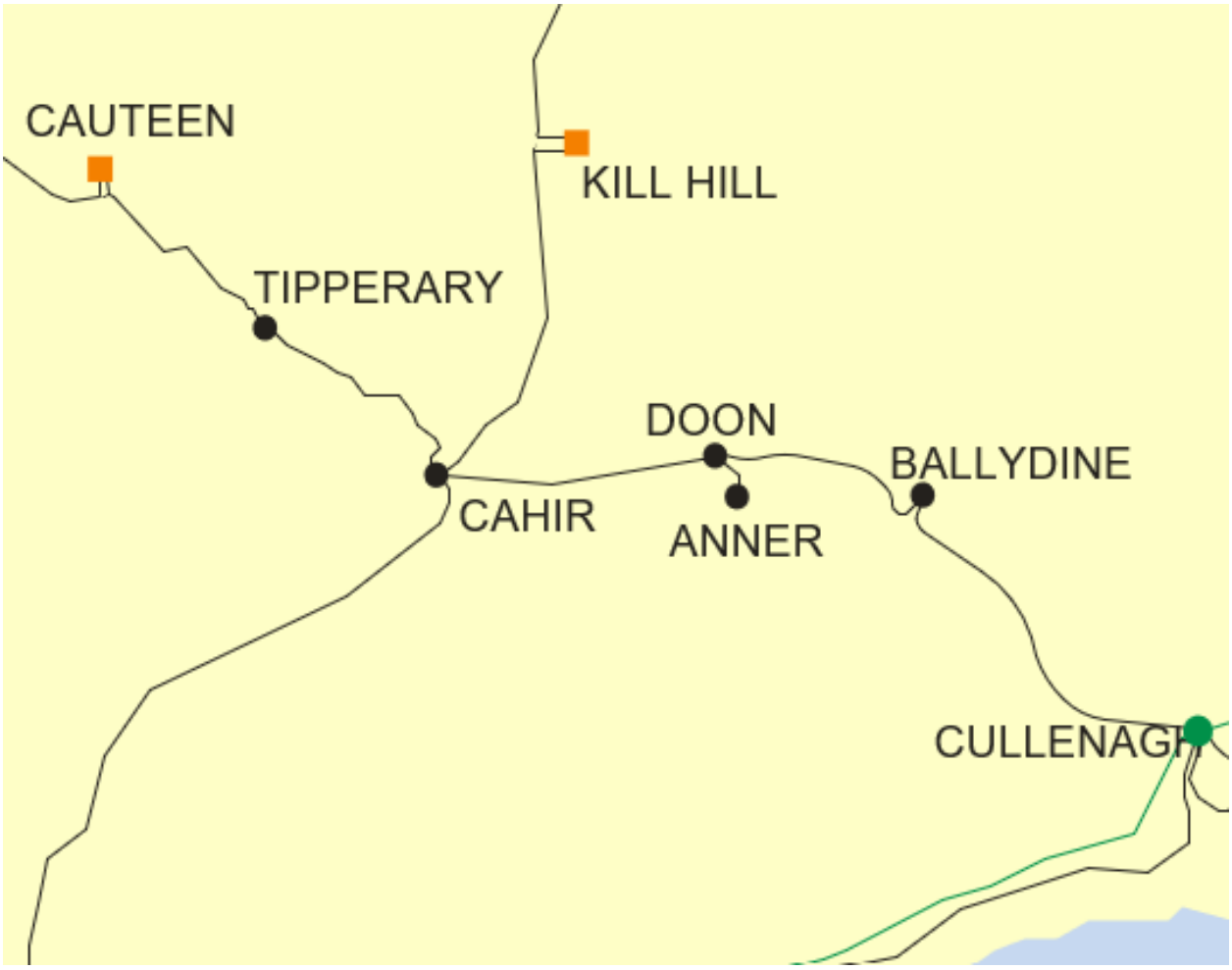

Figure 2-13 - Location of node Doon

Generator	SO	Capacity	Type	Status
Horsepasture Solar Farm (Grian PV)	DSO	8.0	solar non-priority	due to connect
Grian PV Ballyboe	DSO	12.0	solar non-priority	due to connect
Clonmel Renewable Energy Community A	DSO	4.99	solar non-priority	due to connect

Table 2-13 - Generation Included in Study for Node Doon

The solar non-priority data is given in the following table.

Area H1	Year	Initial	33%	66%	ECP	ECP + 3.1 GW offshore	ECP + 5 GW offshore
Installed Capacity (MW)	2026	8	14	19	25		
Installed Capacity (MW)	2028	8	14	19	25	25	
Installed Capacity (MW)	2030				25	25	25
Available Energy (GWh)	2026	9	16	23	29		
Available Energy (GWh)	2028	9	16	23	29	29	
Available Energy (GWh)	2030				29	29	29
Generation (GWh)	2026	9	14	20	23		
Generation (GWh)	2028	9	15	21	24	23	
Generation (GWh)	2030				25	25	24
Surplus (%)	2026	1 %	2 %	5 %	9 %		
Surplus (%)	2028	<1 %	<1 %	2 %	5 %	11 %	
Surplus (%)	2030				2 %	6 %	10 %
Curtailment (%)	2026	1 %	1 %	2 %	4 %		
Curtailment (%)	2028	<1 %	1 %	1 %	2 %	3 %	
Curtailment (%)	2030				1 %	1 %	1 %
Constraint (%)	2026	6 %	6 %	5 %	8 %		
Constraint (%)	2028	5 %	6 %	6 %	10 %	8 %	
Constraint (%)	2030				12 %	8 %	7 %
Total Dispatch Down (%)	2026	7 %	10 %	13 %	21 %		
Total Dispatch Down (%)	2028	5 %	7 %	9 %	17 %	23 %	
Total Dispatch Down (%)	2030				14 %	15 %	19 %

Table 2-14 - Surplus, Curtailment and Constraint for Solar non-priority in Area H1

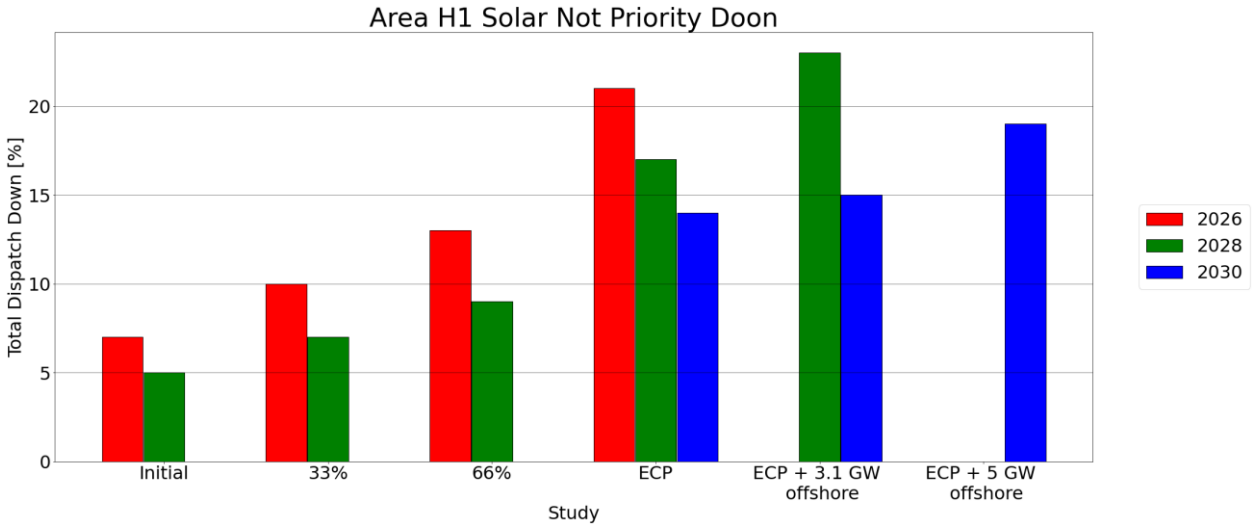

Figure 2-14 - Total Dispatch Down for Solar non-priority for Node Doon

2.7 Ikerrin

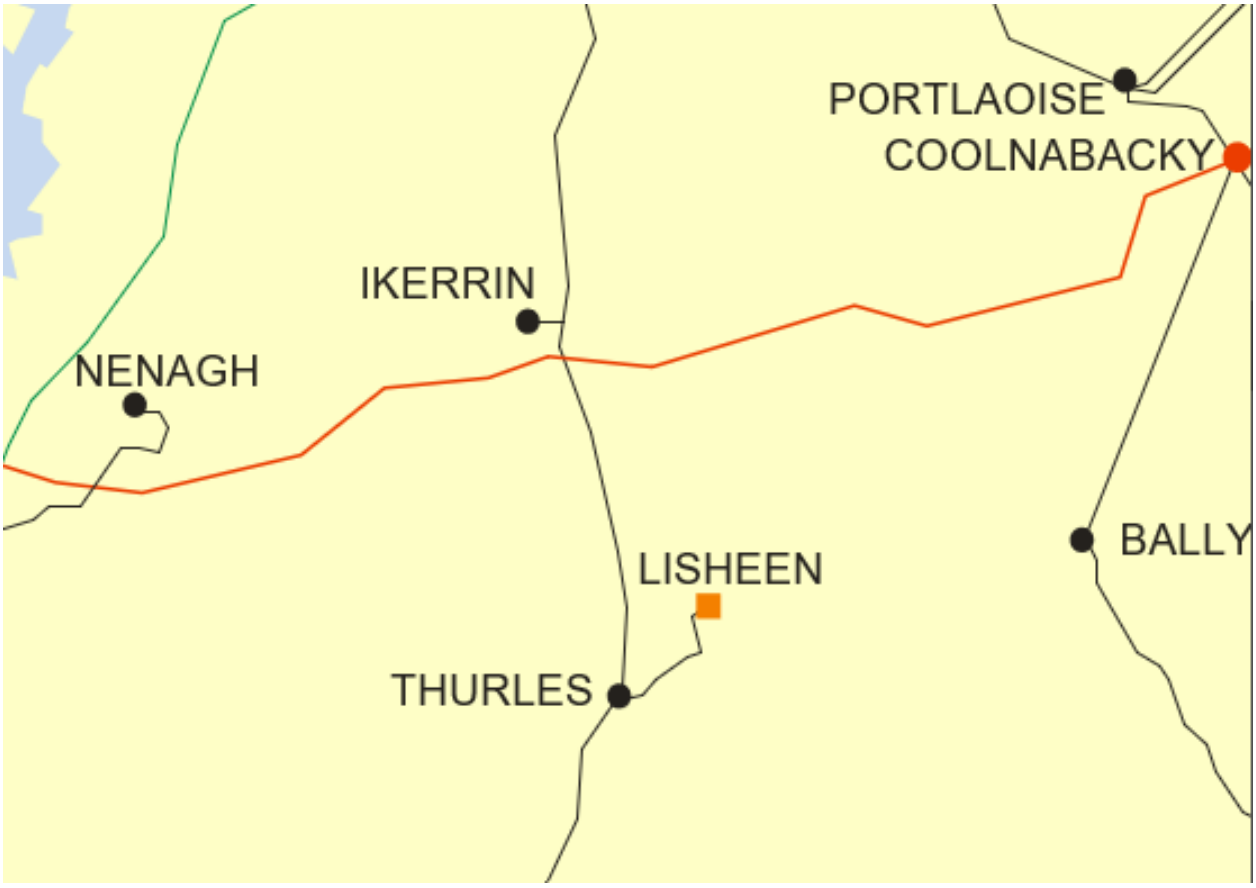

Figure 2-15 - Location of node Ikerrin

Generator	SO	Capacity	Type	Status
Monaincha Bog Wind Farm (Gate 2)	DSO	3.4	wind priority	connected
Monaincha Bog Wind Farm (Gate 3)	DSO	32.55	wind priority	connected

Table 2-15 - Generation Included in Study for Node Ikerrin

The wind priority data is given in the following table.

Area H1	Year	Initial	33%	66%	ECP	ECP + 3.1 GW offshore	ECP + 5 GW offshore
Installed Capacity (MW)	2026	36	36	36	36		
Installed Capacity (MW)	2028	36	36	36	36	36	
Installed Capacity (MW)	2030				36	36	36
Available Energy (GWh)	2026	113	113	113	113		
Available Energy (GWh)	2028	114	114	114	114	114	
Available Energy (GWh)	2030				113	113	113
Generation (GWh)	2026	110	109	106	105		
Generation (GWh)	2028	113	112	111	109	105	
Generation (GWh)	2030				112	106	109
Surplus (%)	2026	<1%	<1%	<1%	<1%		
Surplus (%)	2028	<1%	<1%	<1%	<1%	<1%	
Surplus (%)	2030				<1%	<1%	<1%
Curtailment (%)	2026	2 %	4 %	6 %	7 %		
Curtailment (%)	2028	<1%	1 %	2 %	4 %	8 %	
Curtailment (%)	2030				1 %	6 %	4 %
Constraint (%)	2026	<1%	<1%	<1%	<1%		
Constraint (%)	2028	<1%	<1%	<1%	<1%	<1%	
Constraint (%)	2030				<1%	<1%	<1%
Total Dispatch Down (%)	2026	2 %	4 %	6 %	7 %		
Total Dispatch Down (%)	2028	<1%	1 %	2 %	4 %	8 %	
Total Dispatch Down (%)	2030				1 %	6 %	4 %

Table 2-16 - Surplus, Curtailment and Constraint for Wind priority in Area H1

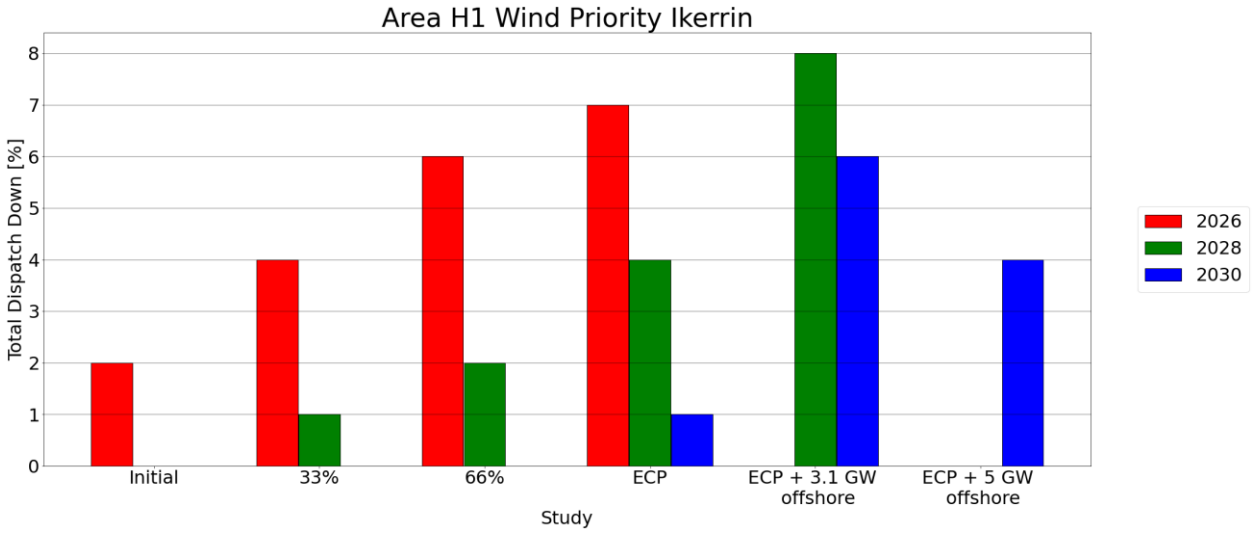

Figure 2-16 - Total Dispatch Down for Wind priority for Node Ikerrin

2.8 Kill Hill

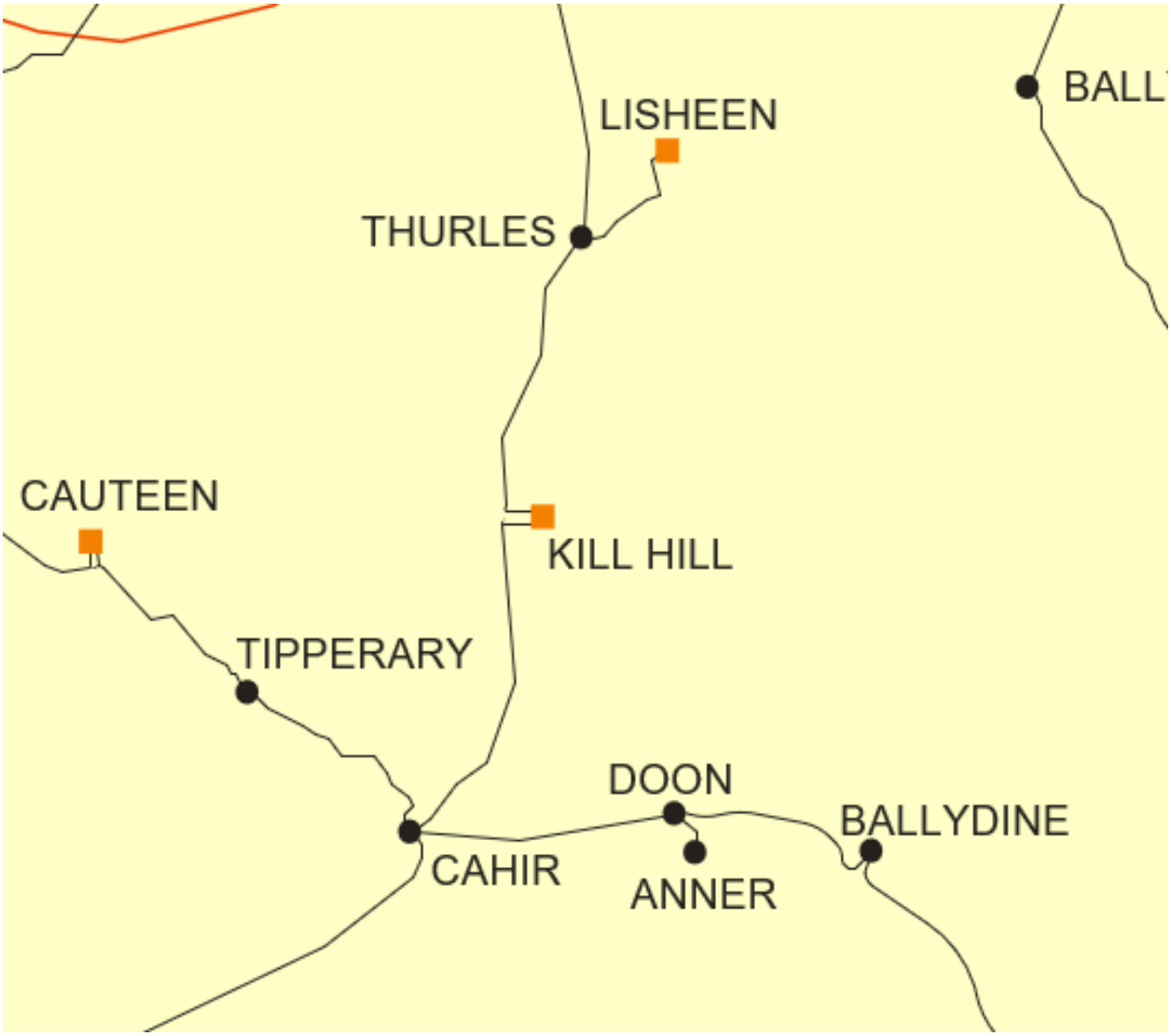

Figure 2-17 - Location of node Kill Hill

Generator	SO	Capacity	Type	Status
Kill Hill (1) - phase 1	TSO	36.0	wind priority	connected

Table 2-17 - Generation Included in Study for Node Kill Hill

The wind priority data is given in the following table.

Area H1	Year	Initial	33%	66%	ECP	ECP + 3.1 GW offshore	ECP + 5 GW offshore
Installed Capacity (MW)	2026	36	36	36	36		
Installed Capacity (MW)	2028	36	36	36	36	36	
Installed Capacity (MW)	2030				36	36	36
Available Energy (GWh)	2026	113	113	113	113		
Available Energy (GWh)	2028	114	114	114	114	114	
Available Energy (GWh)	2030				113	113	113
Generation (GWh)	2026	110	109	107	105		
Generation (GWh)	2028	114	112	111	109	105	
Generation (GWh)	2030				112	107	109
Surplus (%)	2026	<1%	<1%	<1%	<1%		
Surplus (%)	2028	<1%	<1%	<1%	<1%	<1%	
Surplus (%)	2030				<1%	<1%	<1%
Curtailment (%)	2026	2 %	4 %	6 %	7 %		
Curtailment (%)	2028	<1%	1 %	2 %	4 %	8 %	
Curtailment (%)	2030				1 %	6 %	4 %
Constraint (%)	2026	<1%	<1%	<1%	<1%		
Constraint (%)	2028	<1%	<1%	<1%	<1%	<1%	
Constraint (%)	2030				<1%	<1%	<1%
Total Dispatch Down (%)	2026	2 %	4 %	6 %	7 %		
Total Dispatch Down (%)	2028	<1%	1 %	2 %	4 %	8 %	
Total Dispatch Down (%)	2030				1 %	6 %	4 %

Table 2-18 - Surplus, Curtailment and Constraint for Wind priority in Area H1

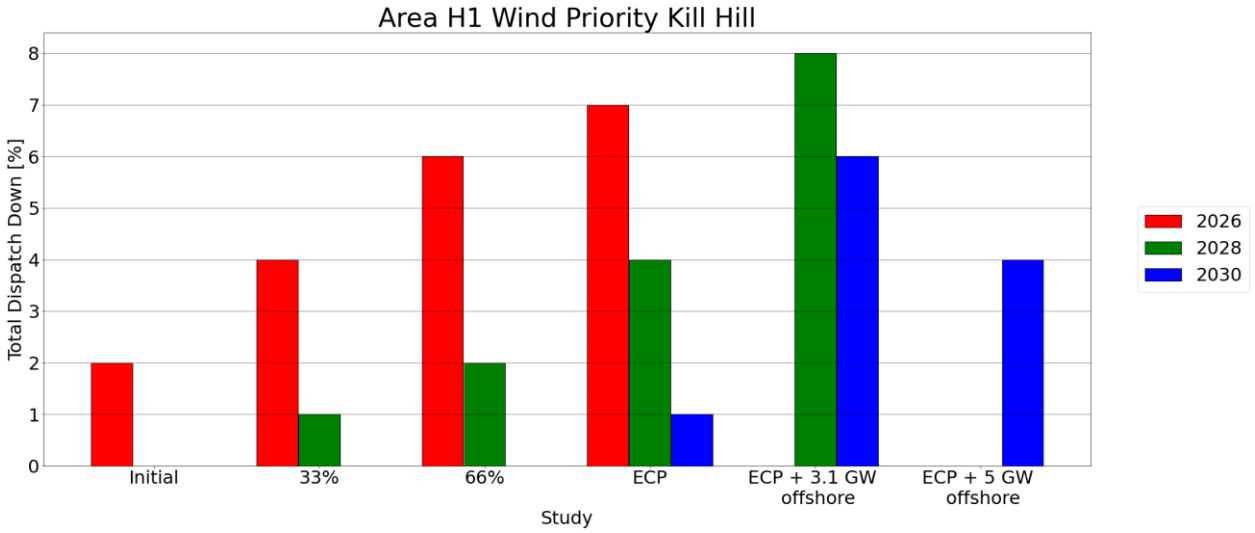

Figure 2-18 - Total Dispatch Down for Wind priority for Node Kill Hill

2.9 Killonan

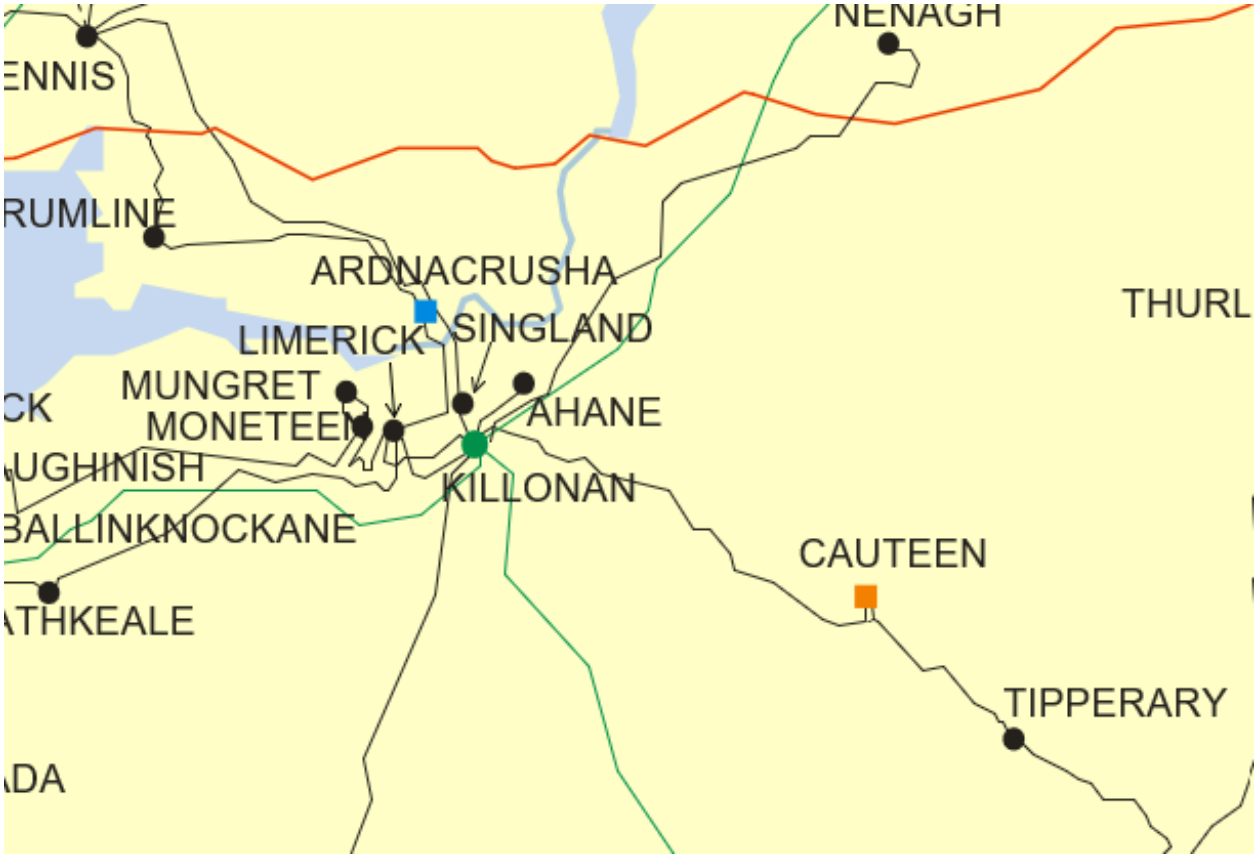

Figure 2-19 - Location of node Killonan

Generator	SO	Capacity	Type	Status
Cureeny (1)	DSO	84.0	wind non-priority	due to connect

Table 2-19 - Generation Included in Study for Node Killonan

The wind non-priority data is given in the following table.

Area H1	Year	Initial	33%	66%	ECP	ECP + 3.1 GW offshore	ECP + 5 GW offshore
Installed Capacity (MW)	2026	84	84	84	84		
Installed Capacity (MW)	2028	84	84	84	84	84	
Installed Capacity (MW)	2030				84	84	84
Available Energy (GWh)	2026	264	264	264	264		
Available Energy (GWh)	2028	266	266	266	266	266	
Available Energy (GWh)	2030				264	264	264
Generation (GWh)	2026	198	184	171	150		
Generation (GWh)	2028	208	186	161	139	56	
Generation (GWh)	2030				241	214	185
Surplus (%)	2026	2 %	5 %	10 %	15 %		
Surplus (%)	2028	<1%	1 %	3 %	6 %	23 %	
Surplus (%)	2030				2 %	12 %	23 %
Curtailment (%)	2026	2 %	3 %	4 %	5 %		
Curtailment (%)	2028	<1%	1 %	2 %	3 %	5 %	
Curtailment (%)	2030				1 %	2 %	2 %
Constraint (%)	2026	21 %	22 %	21 %	23 %		
Constraint (%)	2028	21 %	28 %	35 %	39 %	51 %	
Constraint (%)	2030				6 %	5 %	5 %
Total Dispatch Down (%)	2026	25 %	30 %	35 %	43 %		
Total Dispatch Down (%)	2028	22 %	30 %	40 %	48 %	79 %	
Total Dispatch Down (%)	2030				9 %	19 %	30 %

Table 2-20 - Surplus, Curtailment and Constraint for Wind non-priority in Area H1

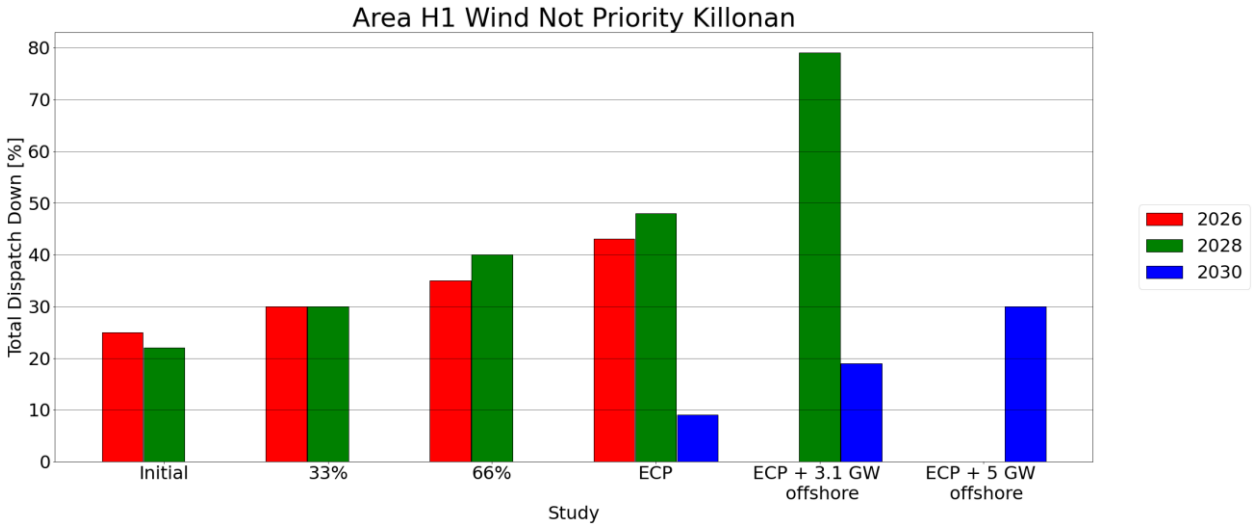

Figure 2-20 - Total Dispatch Down for Wind non-priority for Node Killonan

2.10 Lisheen

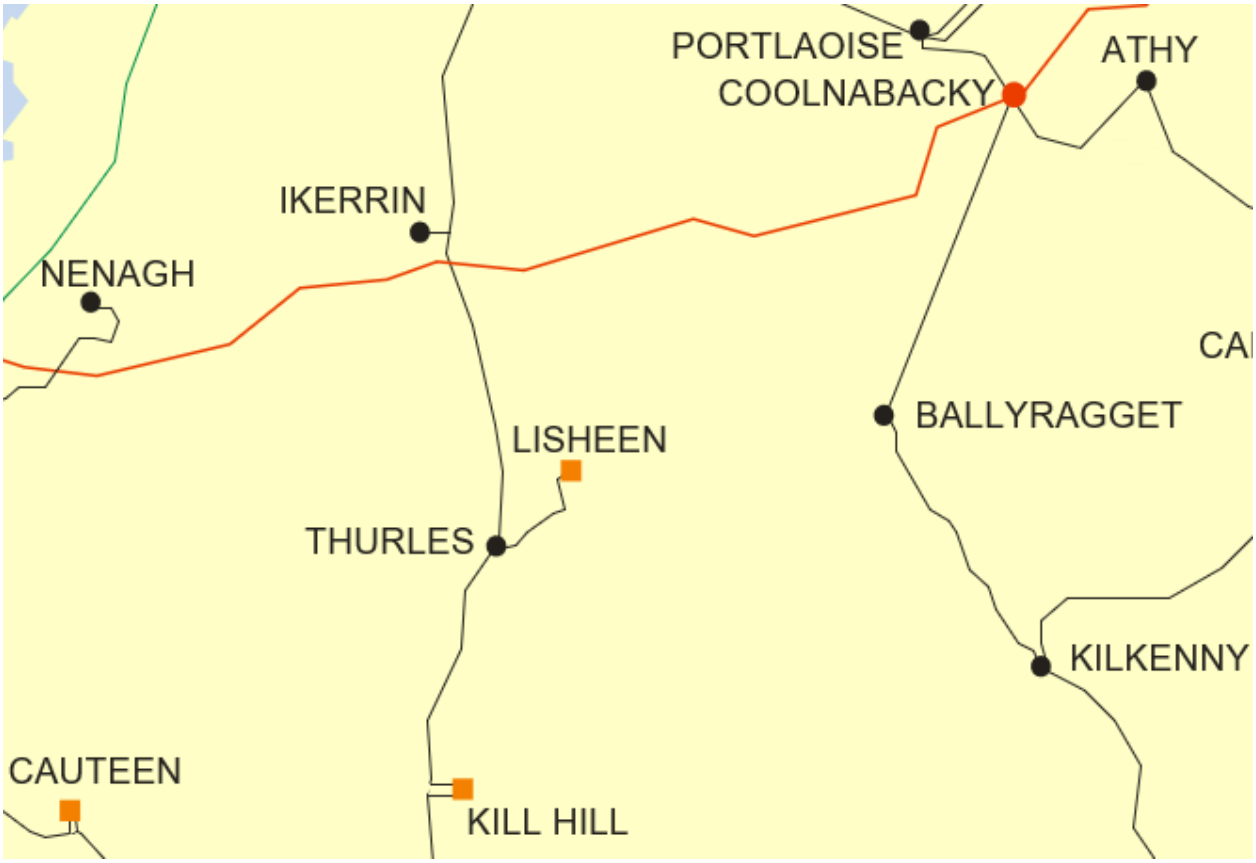

Figure 2-21 - Location of node Lisheen

Generator	SO	Capacity	Type	Status
Bruckana (1)	DSO	39.6	wind priority	connected
Lisheen (1)	TSO	36.0	wind priority	connected
Lisheen (1a)	TSO	23.0	wind priority	connected
Lisheen 3	TSO	28.8	wind non-priority	connected
Kiloran Solar PV Farm	TSO	76.0	solar non-priority	due to connect

Table 2-21 - Generation Included in Study for Node Lisheen

The solar non-priority data is given in the following table.

Area H1	Year	Initial	33%	66%	ECP	ECP + 3.1 GW offshore	ECP + 5 GW offshore
Installed Capacity (MW)	2026		25	51	76		
Installed Capacity (MW)	2028		25	51	76	76	
Installed Capacity (MW)	2030				76	76	76
Available Energy (GWh)	2026		30	59	89		
Available Energy (GWh)	2028		30	59	89	89	
Available Energy (GWh)	2030				89	89	89
Generation (GWh)	2026		27	52	71		
Generation (GWh)	2028		28	54	74	68	
Generation (GWh)	2030				76	75	72
Surplus (%)	2026		2 %	5 %	9 %		
Surplus (%)	2028		<1 %	2 %	5 %	11 %	
Surplus (%)	2030				2 %	6 %	10 %
Curtailment (%)	2026		1 %	2 %	4 %		
Curtailment (%)	2028		1 %	1 %	2 %	3 %	
Curtailment (%)	2030				1 %	1 %	1 %
Constraint (%)	2026		6 %	5 %	8 %		
Constraint (%)	2028		6 %	6 %	10 %	8 %	
Constraint (%)	2030				12 %	8 %	7 %
Total Dispatch Down (%)	2026		10 %	13 %	21 %		
Total Dispatch Down (%)	2028		7 %	9 %	17 %	23 %	
Total Dispatch Down (%)	2030				14 %	15 %	19 %

Table 2-22 - Surplus, Curtailment and Constraint for Solar non-priority in Area H1

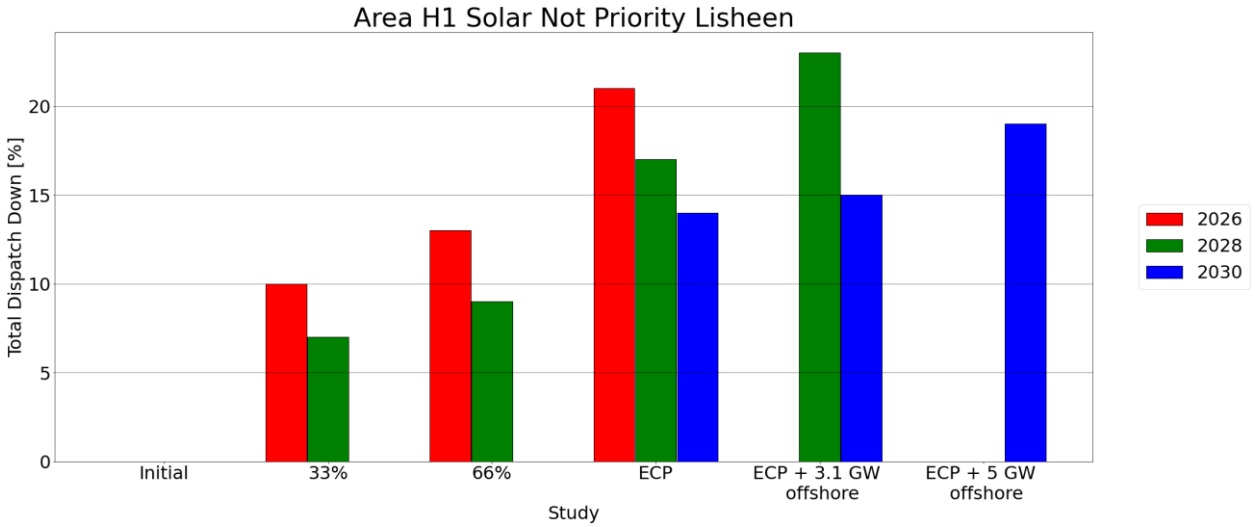

Figure 2-22 - Total Dispatch Down for Solar non-priority for Node Lisheen

The wind non-priority data is given in the following table.

Area H1	Year	Initial	33%	66%	ECP	ECP + 3.1 GW offshore	ECP + 5 GW offshore
Installed Capacity (MW)	2026	29	29	29	29		
Installed Capacity (MW)	2028	29	29	29	29	29	
Installed Capacity (MW)	2030				29	29	29
Available Energy (GWh)	2026	91	91	91	91		
Available Energy (GWh)	2028	91	91	91	91	91	
Available Energy (GWh)	2030				91	91	91
Generation (GWh)	2026	68	63	59	52		
Generation (GWh)	2028	71	64	55	47	19	
Generation (GWh)	2030				83	73	63
Surplus (%)	2026	2 %	5 %	10 %	15 %		
Surplus (%)	2028	<1 %	1 %	3 %	6 %	23 %	
Surplus (%)	2030				2 %	12 %	23 %
Curtailment (%)	2026	2 %	3 %	4 %	5 %		
Curtailment (%)	2028	<1 %	1 %	2 %	3 %	5 %	
Curtailment (%)	2030				1 %	2 %	2 %
Constraint (%)	2026	21 %	22 %	21 %	23 %		
Constraint (%)	2028	21 %	28 %	35 %	39 %	51 %	
Constraint (%)	2030				6 %	5 %	5 %
Total Dispatch Down (%)	2026	25 %	30 %	35 %	43 %		
Total Dispatch Down (%)	2028	22 %	30 %	40 %	48 %	79 %	
Total Dispatch Down (%)	2030				9 %	19 %	30 %

Table 2-23 - Surplus, Curtailment and Constraint for Wind non-priority in Area H1

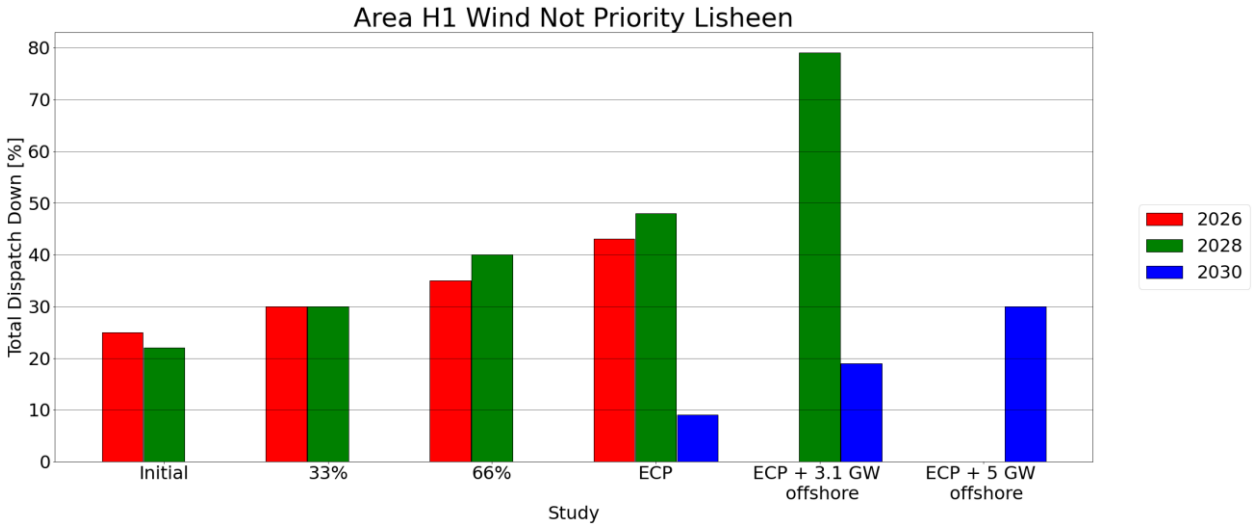

Figure 2-23 - Total Dispatch Down for Wind non-priority for Node Lisheen

The wind priority data is given in the following table.

Area H1	Year	Initial	33%	66%	ECP	ECP + 3.1 GW offshore	ECP + 5 GW offshore
Installed Capacity (MW)	2026	99	99	99	99		
Installed Capacity (MW)	2028	99	99	99	99	99	
Installed Capacity (MW)	2030				99	99	99
Available Energy (GWh)	2026	310	310	310	310		
Available Energy (GWh)	2028	312	312	312	312	312	
Available Energy (GWh)	2030				310	310	310
Generation (GWh)	2026	302	298	292	287		
Generation (GWh)	2028	311	308	304	300	288	
Generation (GWh)	2030				308	292	299
Surplus (%)	2026	<1%	<1%	<1%	<1%		
Surplus (%)	2028	<1%	<1%	<1%	<1%	<1%	
Surplus (%)	2030				<1%	<1%	<1%
Curtailment (%)	2026	2 %	4 %	6 %	7 %		
Curtailment (%)	2028	<1%	1 %	2 %	4 %	8 %	
Curtailment (%)	2030				1 %	6 %	4 %
Constraint (%)	2026	<1%	<1%	<1%	<1%		
Constraint (%)	2028	<1%	<1%	<1%	<1%	<1%	
Constraint (%)	2030				<1%	<1%	<1%
Total Dispatch Down (%)	2026	2 %	4 %	6 %	7 %		
Total Dispatch Down (%)	2028	<1%	1 %	2 %	4 %	8 %	
Total Dispatch Down (%)	2030				1 %	6 %	4 %

Table 2-24 - Surplus, Curtailment and Constraint for Wind priority in Area H1

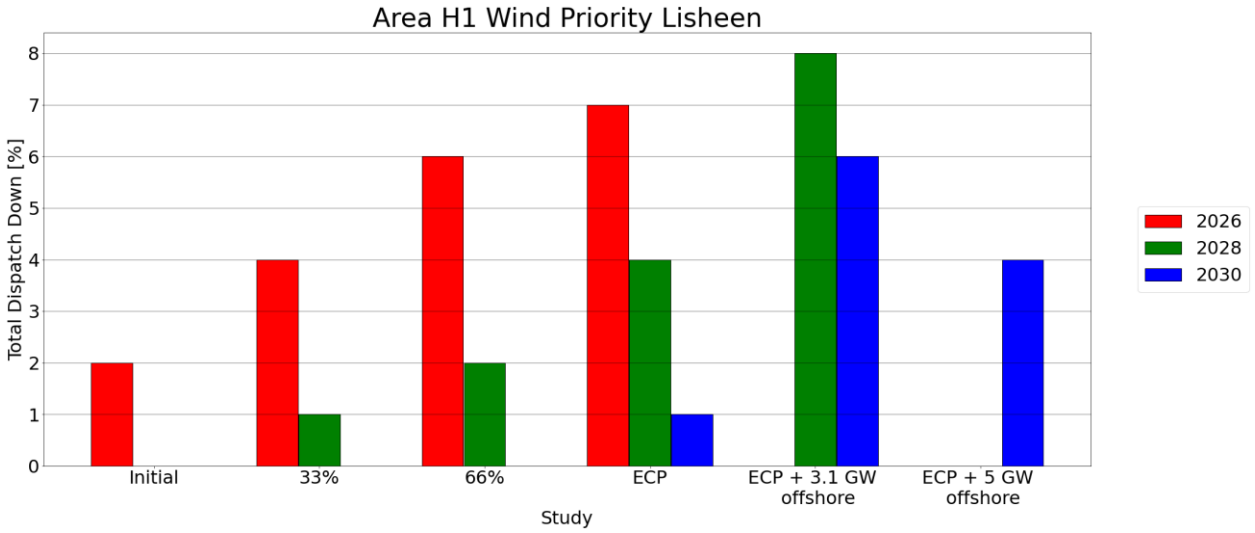

Figure 2-24 - Total Dispatch Down for Wind priority for Node Lisheen

2.11 Mothel

Figure 2-25 - Location of node Mothel

Generator	SO	Capacity	Type	Status
Mothel PV	TSO	60.0	solar non-priority	due to connect

Table 2-25 - Generation Included in Study for Node Mothel

The solar non-priority data is given in the following table.

Area H1	Year	Initial	33%	66%	ECP	ECP + 3.1 GW offshore	ECP + 5 GW offshore
Installed Capacity (MW)	2026		20	40	60		
Installed Capacity (MW)	2028		20	40	60	60	
Installed Capacity (MW)	2030				60	60	60
Available Energy (GWh)	2026		23	47	70		
Available Energy (GWh)	2028		23	47	70	70	
Available Energy (GWh)	2030				70	70	70
Generation (GWh)	2026		21	41	56		
Generation (GWh)	2028		22	42	58	54	
Generation (GWh)	2030				60	60	57
Surplus (%)	2026		2 %	5 %	9 %		
Surplus (%)	2028		<1 %	2 %	5 %	11 %	
Surplus (%)	2030				2 %	6 %	10 %
Curtailment (%)	2026		1 %	2 %	4 %		
Curtailment (%)	2028		1 %	1 %	2 %	3 %	
Curtailment (%)	2030				1 %	1 %	1 %
Constraint (%)	2026		6 %	5 %	8 %		
Constraint (%)	2028		6 %	6 %	10 %	8 %	
Constraint (%)	2030				12 %	8 %	7 %
Total Dispatch Down (%)	2026		10 %	13 %	21 %		
Total Dispatch Down (%)	2028		7 %	9 %	17 %	23 %	
Total Dispatch Down (%)	2030				14 %	15 %	19 %

Table 2-26 - Surplus, Curtailment and Constraint for Solar non-priority in Area H1

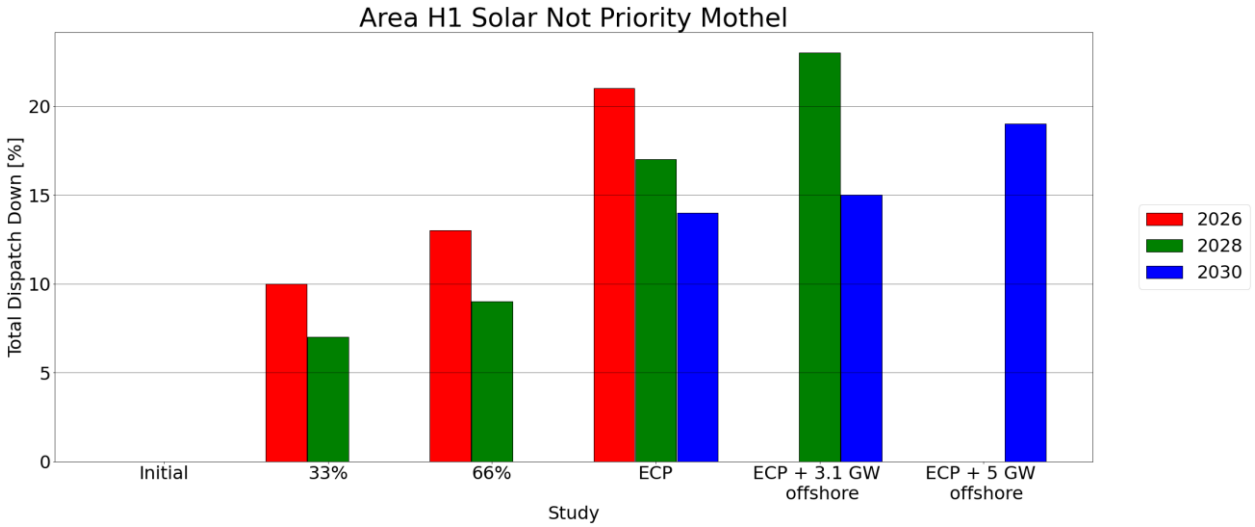

Figure 2-26 - Total Dispatch Down for Solar non-priority for Node Mothel

2.12 Nenagh

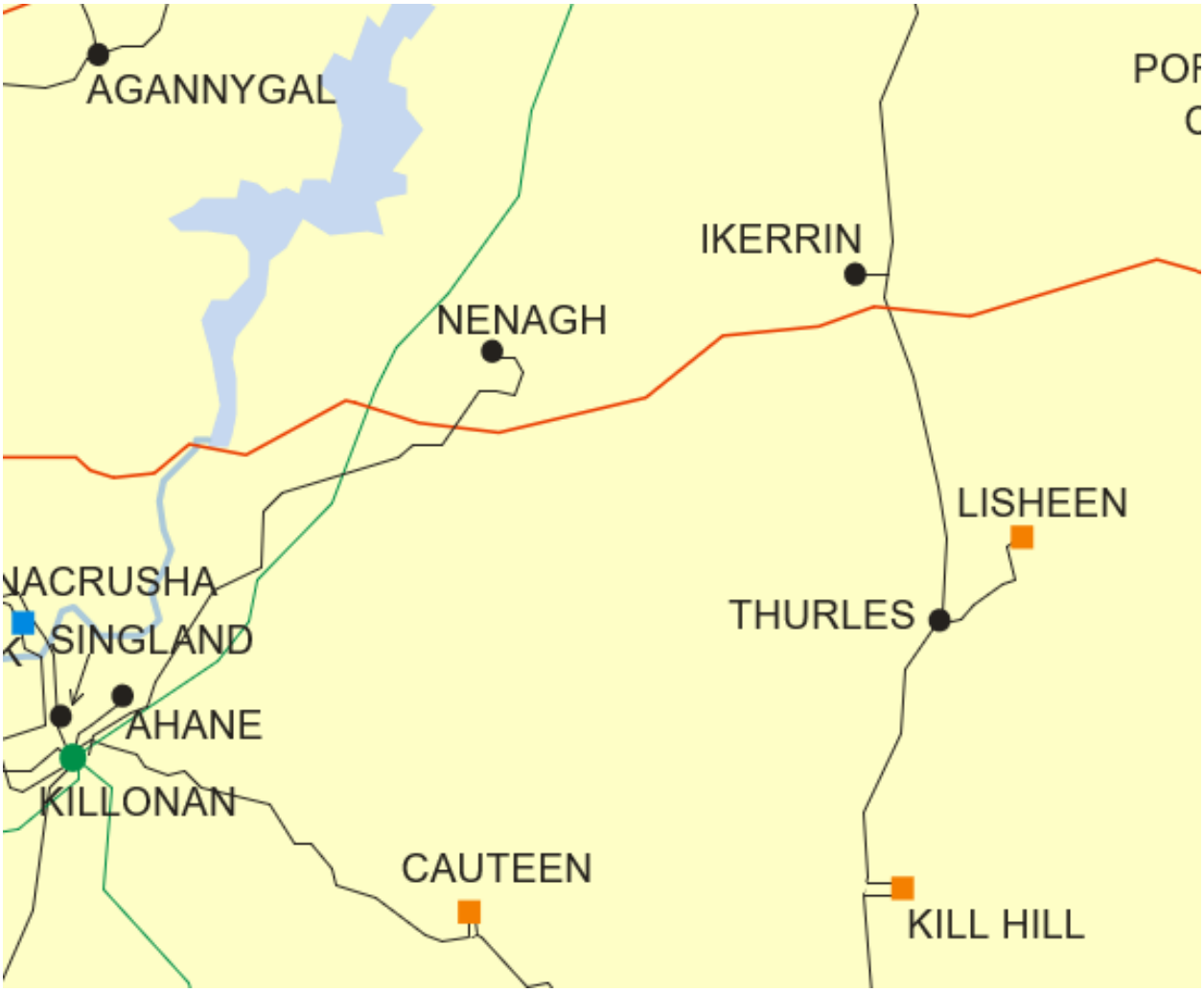

Figure 2-27 - Location of node Nenagh

Generator	SO	Capacity	Type	Status
Ballinlough (1)	DSO	2.55	wind uncontrolled	connected
Ballinveny (1)	DSO	2.55	wind uncontrolled	connected
Curraghgraigue (1)	DSO	2.55	wind uncontrolled	connected
Curraghgraigue (2)	DSO	2.44	wind uncontrolled	connected
Lisbrien Solar Farm	DSO	4.0	solar non-priority	due to connect
Templederry (1)	DSO	3.9	wind uncontrolled	connected

Table 2-27 - Generation Included in Study for Node Nenagh

The solar non-priority data is given in the following table.

Area H1	Year	Initial	33%	66%	ECP	ECP + 3.1 GW offshore	ECP + 5 GW offshore
Installed Capacity (MW)	2026	4	4	4	4		
Installed Capacity (MW)	2028	4	4	4	4	4	
Installed Capacity (MW)	2030				4	4	4
Available Energy (GWh)	2026	5	5	5	5		
Available Energy (GWh)	2028	5	5	5	5	5	
Available Energy (GWh)	2030				5	5	5
Generation (GWh)	2026	4	4	4	4		
Generation (GWh)	2028	4	4	4	4	4	
Generation (GWh)	2030				4	4	4
Surplus (%)	2026	1 %	2 %	5 %	9 %		
Surplus (%)	2028	<1%	<1%	2 %	5 %	11 %	
Surplus (%)	2030				2 %	6 %	10 %
Curtailment (%)	2026	1 %	1 %	2 %	4 %		
Curtailment (%)	2028	<1%	1 %	1 %	2 %	3 %	
Curtailment (%)	2030				1 %	1 %	1 %
Constraint (%)	2026	6 %	6 %	5 %	8 %		
Constraint (%)	2028	5 %	6 %	6 %	10 %	8 %	
Constraint (%)	2030				12 %	8 %	7 %
Total Dispatch Down (%)	2026	7 %	10 %	13 %	21 %		
Total Dispatch Down (%)	2028	5 %	7 %	9 %	17 %	23 %	
Total Dispatch Down (%)	2030				14 %	15 %	19 %

Table 2-28 - Surplus, Curtailment and Constraint for Solar non-priority in Area H1

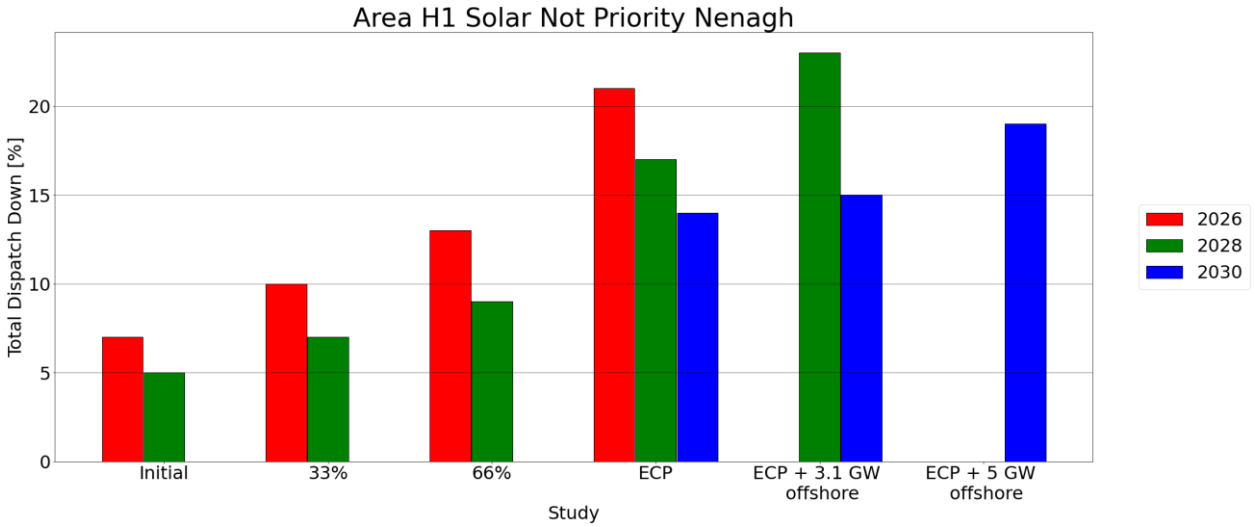

Figure 2-28 - Total Dispatch Down for Solar non-priority for Node Nenagh

2.13 Thurles

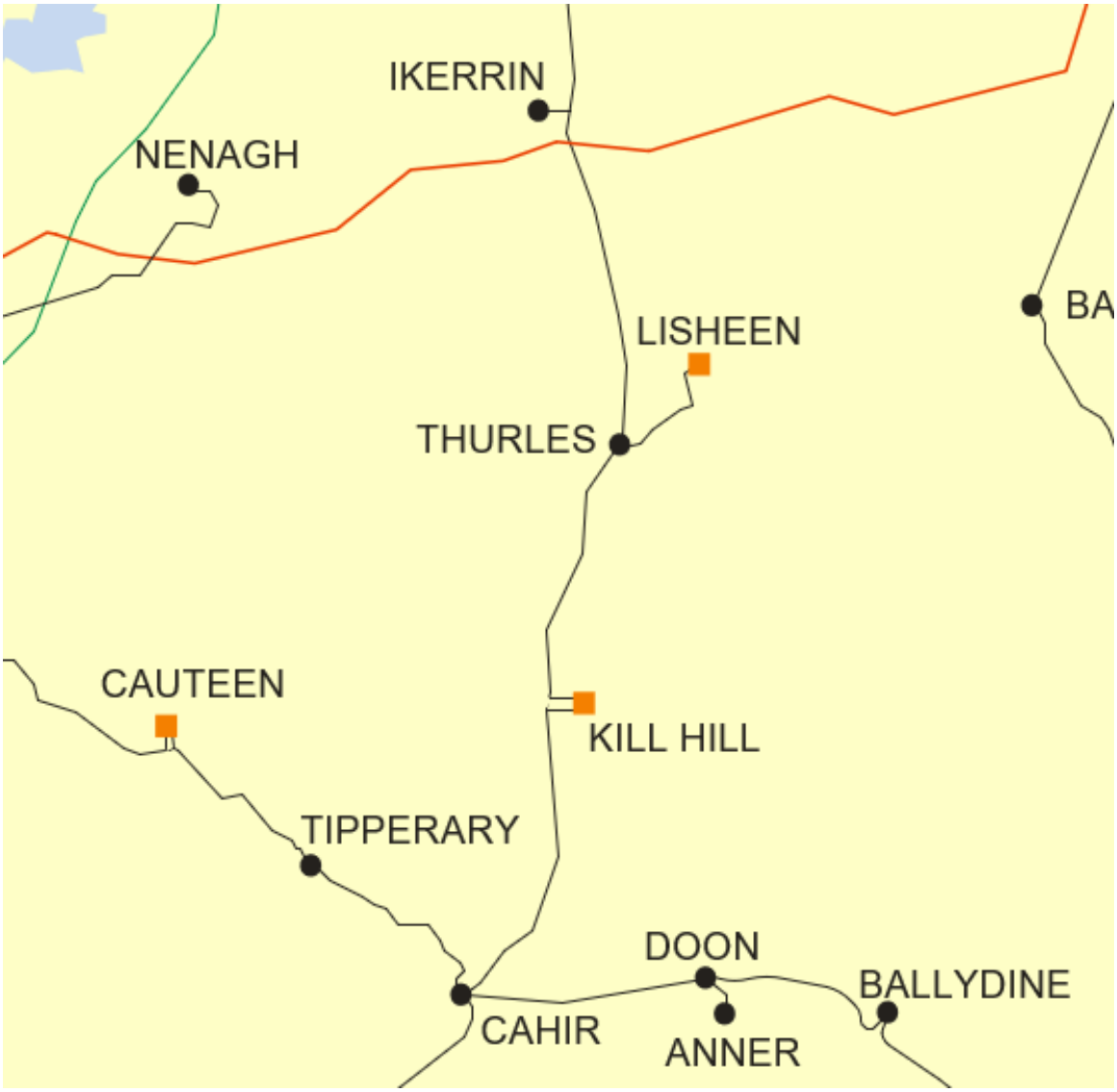

Figure 2-29 - Location of node Thurles

Generator	SO	Capacity	Type	Status
An Cnoc	DSO	11.5	wind priority	connected
Ballinacurry WF	DSO	4.6	wind uncontrolled	connected
Ballybay Wind Farm (Tullaroan)	DSO	13.8	wind priority	connected
Foyle Windfarm	DSO	9.6	wind priority	connected
Gurteen (1)	DSO	2.3	wind uncontrolled	connected
Ballycarrane Solar Farm	DSO	22.0	solar non-priority	due to connect
Rahealty Solar Farm	DSO	18.0	solar non-priority	due to connect

Table 2-29 - Generation Included in Study for Node Thurles

The solar non-priority data is given in the following table.

Area H1	Year	Initial	33%	66%	ECP	ECP + 3.1 GW offshore	ECP + 5 GW offshore
Installed Capacity (MW)	2026		13	27	40		
Installed Capacity (MW)	2028		13	27	40	40	
Installed Capacity (MW)	2030				40	40	40
Available Energy (GWh)	2026		16	31	47		
Available Energy (GWh)	2028		16	31	47	47	
Available Energy (GWh)	2030				47	47	47
Generation (GWh)	2026		14	27	37		
Generation (GWh)	2028		15	28	39	36	
Generation (GWh)	2030				40	40	38
Surplus (%)	2026		2 %	5 %	9 %		
Surplus (%)	2028		<1 %	2 %	5 %	11 %	
Surplus (%)	2030				2 %	6 %	10 %
Curtailment (%)	2026		1 %	2 %	4 %		
Curtailment (%)	2028		1 %	1 %	2 %	3 %	
Curtailment (%)	2030				1 %	1 %	1 %
Constraint (%)	2026		6 %	5 %	8 %		
Constraint (%)	2028		6 %	6 %	10 %	8 %	
Constraint (%)	2030				12 %	8 %	7 %
Total Dispatch Down (%)	2026		10 %	13 %	21 %		
Total Dispatch Down (%)	2028		7 %	9 %	17 %	23 %	
Total Dispatch Down (%)	2030				14 %	15 %	19 %

Table 2-30 - Surplus, Curtailment and Constraint for Solar non-priority in Area H1

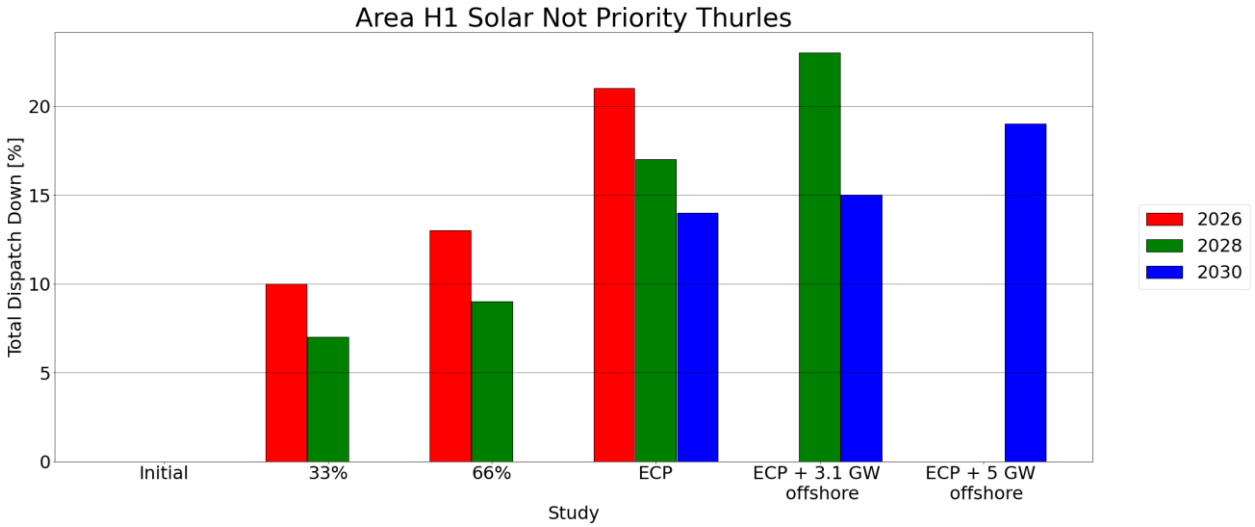

Figure 2-30 - Total Dispatch Down for Solar non-priority for Node Thurles

The wind priority data is given in the following table.

Area H1	Year	Initial	33%	66%	ECP	ECP + 3.1 GW offshore	ECP + 5 GW offshore
Installed Capacity (MW)	2026	35	35	35	35		
Installed Capacity (MW)	2028	35	35	35	35	35	
Installed Capacity (MW)	2030				35	35	35
Available Energy (GWh)	2026	110	110	110	110		
Available Energy (GWh)	2028	110	110	110	110	110	
Available Energy (GWh)	2030				110	110	110
Generation (GWh)	2026	107	105	103	102		
Generation (GWh)	2028	110	109	108	106	102	
Generation (GWh)	2030				109	103	106
Surplus (%)	2026	<1%	<1%	<1%	<1%		
Surplus (%)	2028	<1%	<1%	<1%	<1%	<1%	
Surplus (%)	2030				<1%	<1%	<1%
Curtailment (%)	2026	2 %	4 %	6 %	7 %		
Curtailment (%)	2028	<1%	1 %	2 %	4 %	8 %	
Curtailment (%)	2030				1 %	6 %	4 %
Constraint (%)	2026	<1%	<1%	<1%	<1%		
Constraint (%)	2028	<1%	<1%	<1%	<1%	<1%	
Constraint (%)	2030				<1%	<1%	<1%
Total Dispatch Down (%)	2026	2 %	4 %	6 %	7 %		
Total Dispatch Down (%)	2028	<1%	1 %	2 %	4 %	8 %	
Total Dispatch Down (%)	2030				1 %	6 %	4 %

Table 2-31 - Surplus, Curtailment and Constraint for Wind priority in Area H1

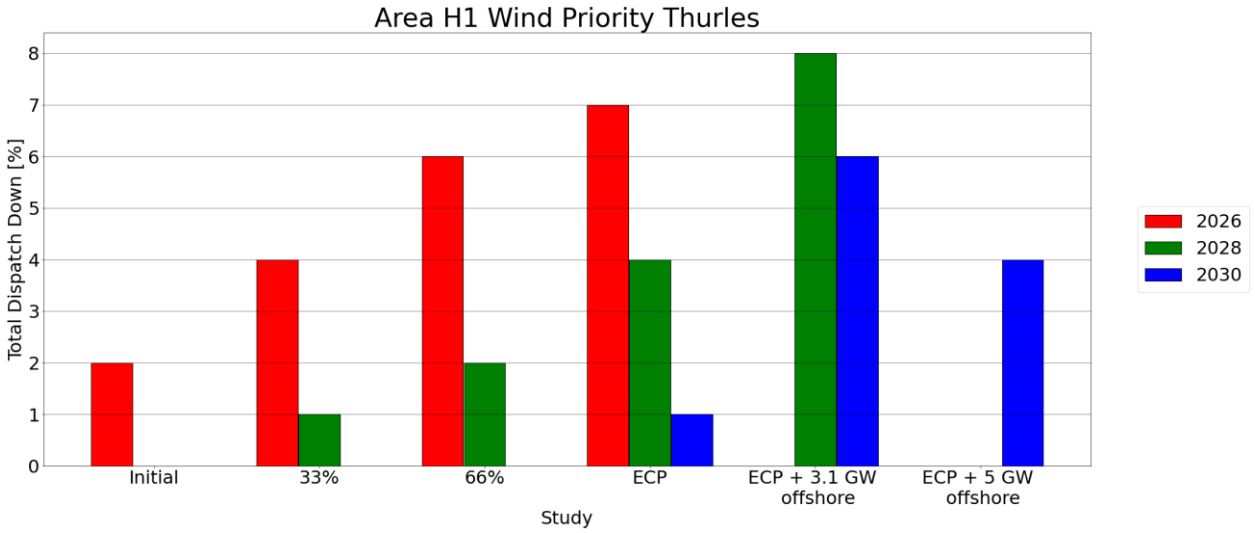

Figure 2-31 - Total Dispatch Down for Wind priority for Node Thurles

2.14 Timoney

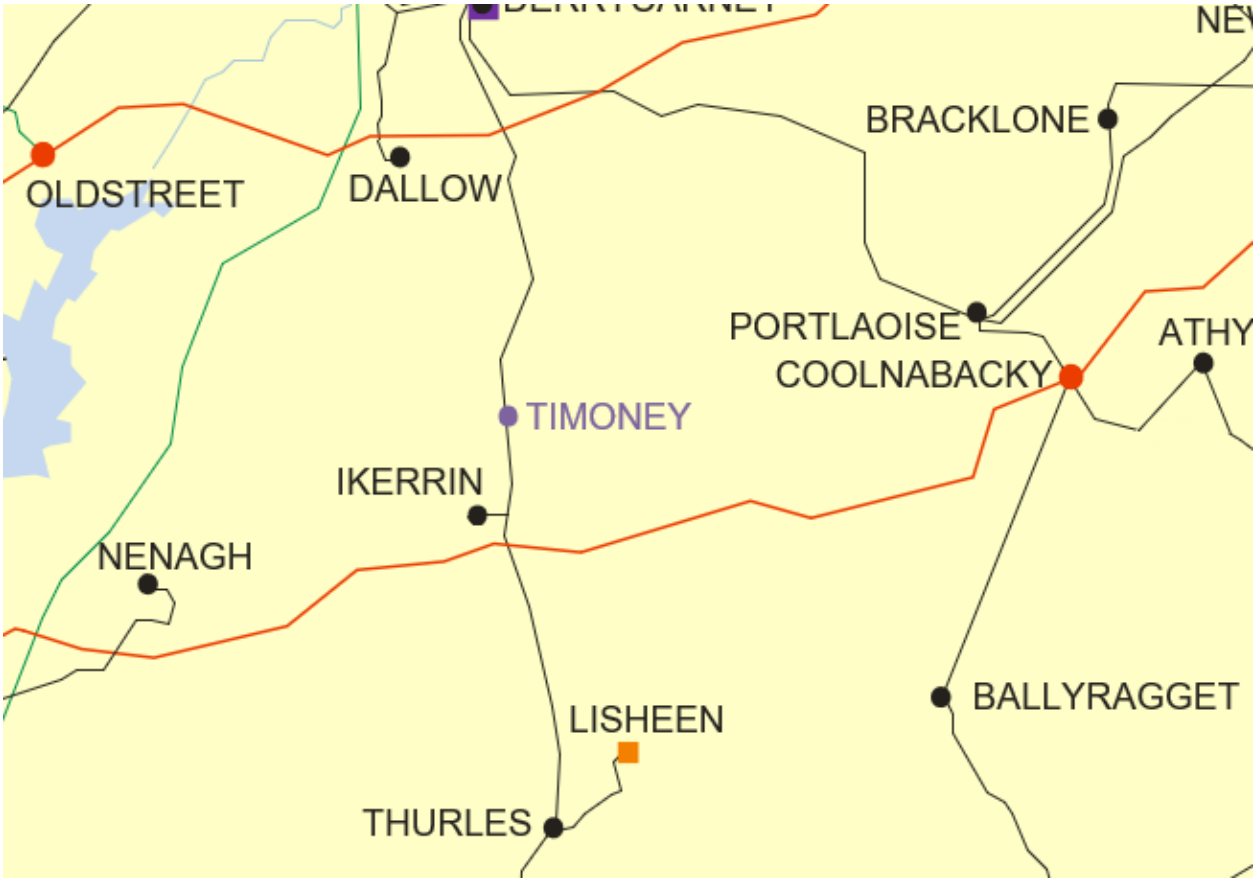

Figure 2-32 - Location of node Timoney

Generator	SO	Capacity	Type	Status
Erkina solar	TSO	66.56	solar non-priority	due to connect
Erkina Solar Park Extension	TSO	90.0	solar non-priority	due to connect

Table 2-32 - Generation Included in Study for Node Timoney

The solar non-priority data is given in the following table.

Area H1	Year	Initial	33%	66%	ECP	ECP + 3.1 GW offshore	ECP + 5 GW offshore
Installed Capacity (MW)	2026		52	104	157		
Installed Capacity (MW)	2028		52	104	157	157	
Installed Capacity (MW)	2030				157	157	157
Available Energy (GWh)	2026		61	122	183		
Available Energy (GWh)	2028		61	122	184	184	
Available Energy (GWh)	2030				183	183	183
Generation (GWh)	2026		55	106	146		
Generation (GWh)	2028		57	111	153	141	
Generation (GWh)	2030				157	155	149
Surplus (%)	2026		2 %	5 %	9 %		
Surplus (%)	2028		<1 %	2 %	5 %	11 %	
Surplus (%)	2030				2 %	6 %	10 %
Curtailment (%)	2026		1 %	2 %	4 %		
Curtailment (%)	2028		1 %	1 %	2 %	3 %	
Curtailment (%)	2030				1 %	1 %	1 %
Constraint (%)	2026		6 %	5 %	8 %		
Constraint (%)	2028		6 %	6 %	10 %	8 %	
Constraint (%)	2030				12 %	8 %	7 %
Total Dispatch Down (%)	2026		10 %	13 %	21 %		
Total Dispatch Down (%)	2028		7 %	9 %	17 %	23 %	
Total Dispatch Down (%)	2030				14 %	15 %	19 %

Table 2-33 - Surplus, Curtailment and Constraint for Solar non-priority in Area H1

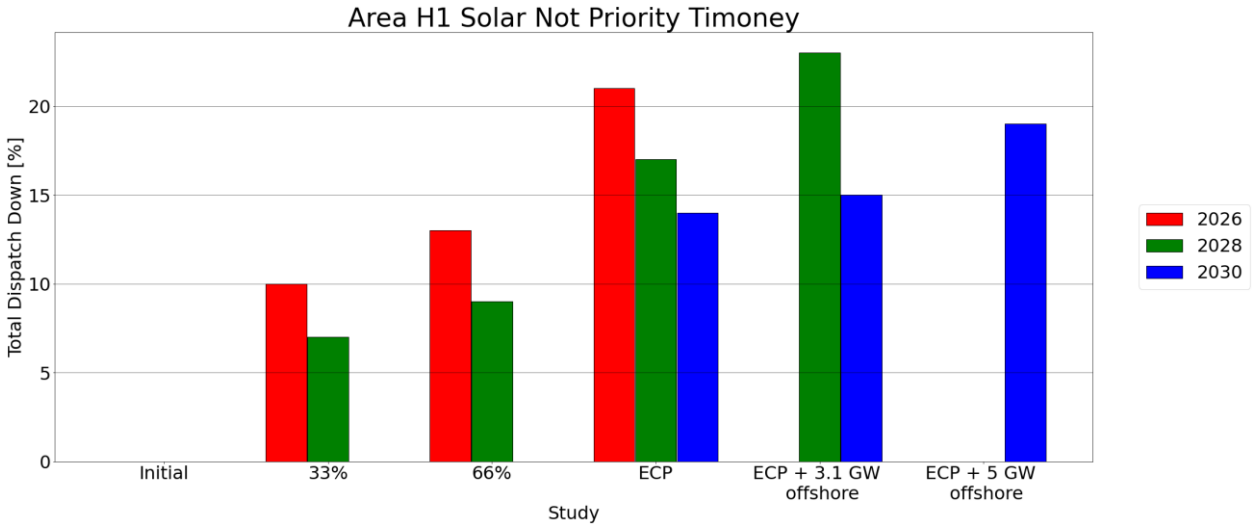

Figure 2-33 - Total Dispatch Down for Solar non-priority for Node Timoney

2.15 Tipperary

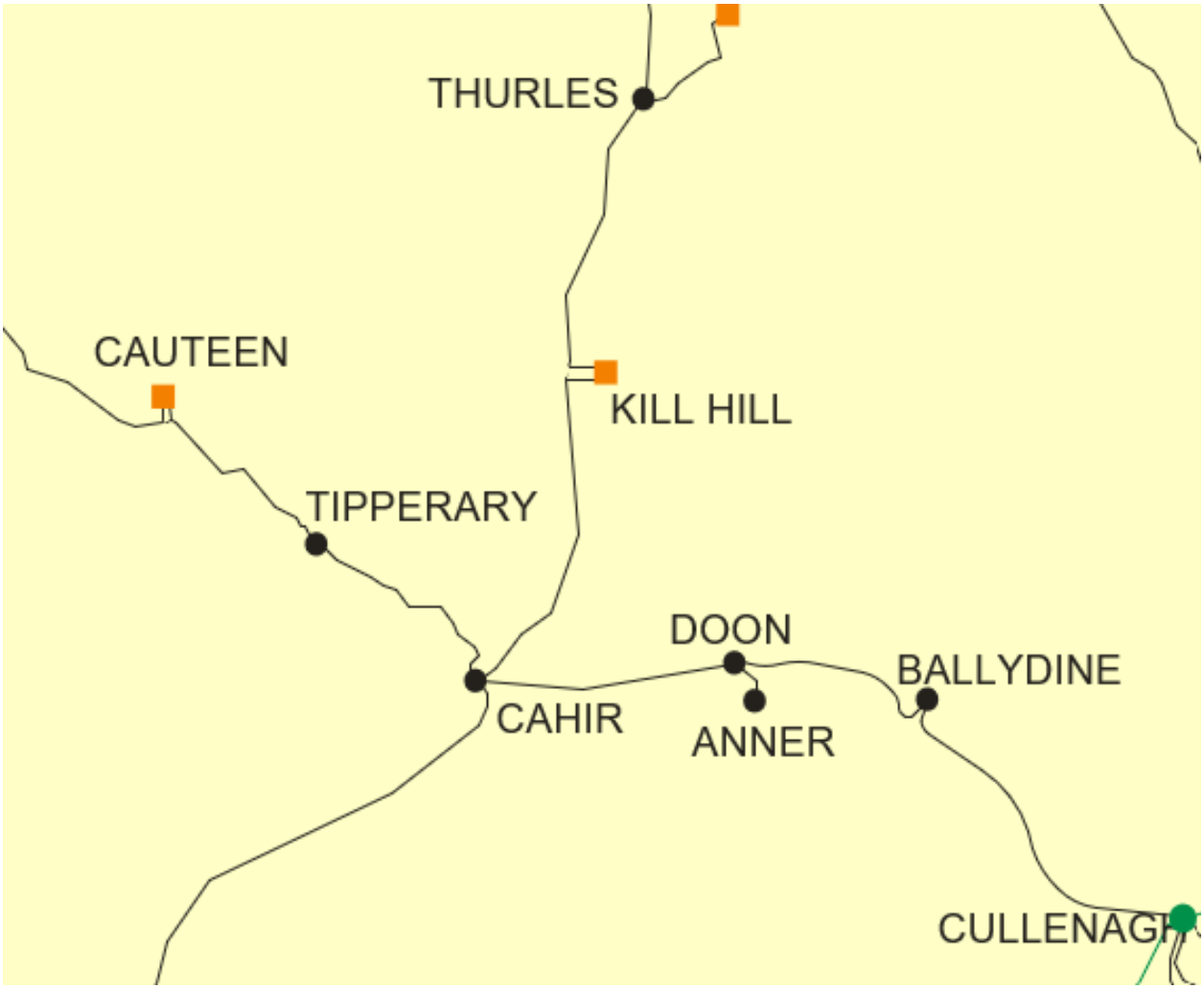

Figure 2-34 - Location of node Tipperary

Generator	SO	Capacity	Type	Status
Ballinalard Solar Farm	DSO	4.0	solar non-priority	due to connect
Slievereagh (1)	DSO	3.0	wind uncontrolled	connected
Slievereagh Wind Farm (2)	DSO	1.6	wind uncontrolled	connected

Table 2-34 - Generation Included in Study for Node Tipperary

The solar non-priority data is given in the following table.

Area H1	Year	Initial	33%	66%	ECP	ECP + 3.1 GW offshore	ECP + 5 GW offshore
Installed Capacity (MW)	2026	4	4	4	4		
Installed Capacity (MW)	2028	4	4	4	4	4	
Installed Capacity (MW)	2030				4	4	4
Available Energy (GWh)	2026	5	5	5	5		
Available Energy (GWh)	2028	5	5	5	5	5	
Available Energy (GWh)	2030				5	5	5
Generation (GWh)	2026	4	4	4	4		
Generation (GWh)	2028	4	4	4	4	4	
Generation (GWh)	2030				4	4	4
Surplus (%)	2026	1 %	2 %	5 %	9 %		
Surplus (%)	2028	<1%	<1%	2 %	5 %	11 %	
Surplus (%)	2030				2 %	6 %	10 %
Curtailment (%)	2026	1 %	1 %	2 %	4 %		
Curtailment (%)	2028	<1%	1 %	1 %	2 %	3 %	
Curtailment (%)	2030				1 %	1 %	1 %
Constraint (%)	2026	6 %	6 %	5 %	8 %		
Constraint (%)	2028	5 %	6 %	6 %	10 %	8 %	
Constraint (%)	2030				12 %	8 %	7 %
Total Dispatch Down (%)	2026	7 %	10 %	13 %	21 %		
Total Dispatch Down (%)	2028	5 %	7 %	9 %	17 %	23 %	
Total Dispatch Down (%)	2030				14 %	15 %	19 %

Table 2-35 - Surplus, Curtailment and Constraint for Solar non-priority in Area H1

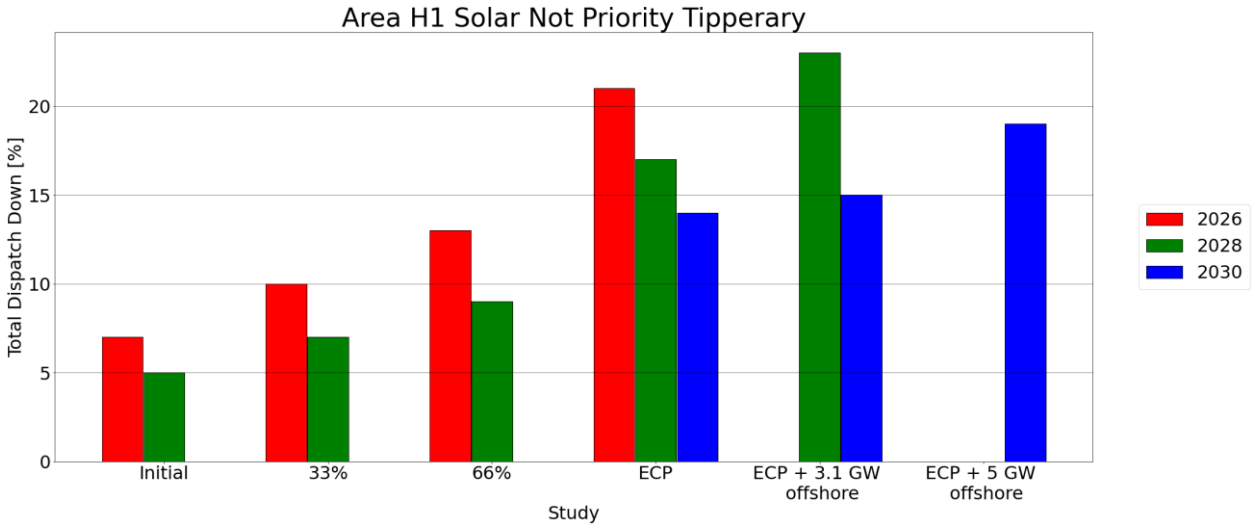

Figure 2-35 - Total Dispatch Down for Solar non-priority for Node Tipperary