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STOR Market Information Report - TR36

Published 12th October 2018

Foreword

Welcome to the Market Information Report for TR36 which was the last opportunity to tender for Year 12.

We held our first webinar for STOR following TR35 to allow an opportunity to directly engage with providers directly. We had a great turn-out and participation from providers which is a promising sign of the markets engagement in the service. Slides and the FAQ from the presentation can be found on this page.

As part of the work we are doing on our balancing service following the publication of the response and reserve roadmap, we have made progress in some areas. We have hosted a webinar outlining the new despatch system, ASDP, that we will be introducing during 2019 for NBM providers. Material presented as part of the webinar can be found under the PAS Documents section in this link.

Over the summer, we published an OCP setting out changes that we are considering to the STOR service. We have been reviewing responses and will be updating the market in the coming weeks with details on the changes that will be implemented.

With the approval of GC0097 and P344, we are working on reviewing all our services to understand how they integrate with TERRE and Wider Access. We are working to provide further information as part of the December tender.

We continue to see lower availability from Flexible and Premium Flexible units which in turns lowers our forecast when we asses new tenders. Committed units offer a higher availability thus we aim to procure a significant proportion of our requirement with these units.

For several years, NBM providers have had the ability to tender for a Premium Flexible service, in which we would accept a certain % of availability from these providers. We have highlighted in recent Market Information Reports that we have seen low availability out-turn from these providers and as such, we would reject Premium tenders and assess them as Flexible. Therefore, from TR37, we will be removing Premium Flexible as an option for providers, returning to only two options; Committed and Flexible. This is inline with our stated ambition to reduce complexity and increase standardisation of tendered products.

We are keen to hear your thoughts on how we can improve the STOR service or this report, so if you do have any comments, please do get in touch.

Thanks,

Haarith Dhorat – STOR Lead, Contract Services
Ray Edmunds – Ancillary Service Analyst, Commercial Operations

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Introduction

This market report is produced after each tender round and is designed to give existing and potential STOR participants an overall view of the tenders received in tender round 36 (TR36). The report provides details of tendered utilisation and availability prices and National Grid's consequent forward contracted position; together with further details on the type and dynamics of the tendered plant. For further information regarding this product, Frequently Asked Questions, or how and when to tender please consult the STOR section found on the National Grid Balancing Services information website:

https://www.nationalgrid.com/uk/electricity/balancing-services/reserve-services/short-term-operating-reserve-stor

This report is under continuous review and development, if you have any comments or suggestions of information you would like to see in future issues of this report, please contact your account manager.

Data and charts that were previously found in this report can still be found in the associated Excel file available on the website.

Operating Reserve Requirement and STOR requirement and de-rating factors

As National Electricity Transmission System Operator (NETSO), National Grid holds an Operating Reserve Requirement (ORR) from 4 hours ahead of time to real time, to take account of demand forecast errors, plant losses and market imbalance. The ORR is met by headroom on market synchronised machines, additional actions taken by National Grid via the Balancing Mechanism (BM) and contracted reserve products. STOR is a contracted reserve product and as such STOR tenders can make up a finite proportion of the ORR. The amount of contracted STOR required is determined by the size of the ORR which changes due to forecast market length, market provided headroom, volume of intermittent generation and demand forecast errors. The proportion of the ORR met by STOR is determined by considering the technical system requirements and the forecast cost of alternatives versus the cost of the tendered STOR units.

National Grid aims to procure STOR tenders such that a minimum of 1800MW of contracted STOR is made available throughout the STOR seasons. The daily and seasonal optimal STOR MW level varies due to real-time and seasonal pressures on the system, but National Grid typically aims to achieve approximately 2300MW of STOR available where economic to do so.

National Grid manages the optimal STOR MW level at a daily resolution through the week-ahead Flexible STOR assessment, refining the available portfolio in response to the forecast conditions for the week-ahead.

To achieve the optimal level at the week-ahead stage, National Grid examines historic availability profiles from Committed and Flexible providers to help determine the volume of STOR tenders to procure at the tri-annual tender round. During the assessment, National Grid uses specific unit forecasts based on history where available and based on any other information available, however as a rule the following de-rated percentages can be applied to the data to develop a clearer understanding of the actual volume available. BM-C 90%, NBM-C 85%, NBM-F non-winter 50% NBM-F winter 25%. These figures represent average outturn availability over the various seasons, the actual availability over the peak winter evenings has been significantly lower for NBM-F. When considering the capacity accepted and tendered it is important to think of it not in absolute volumes but instead the de-rated volume. Whilst there is currently no fixed limit to the amount of Committed, Flexible, or Premium Flexible we are willing to accept, committed units are key in meeting the requirement during those periods of low non-committed availability and as such National Grid values committed units particularly in the winter seasons.

The two versions of the chart below demonstrate this concept and highlight the recent change in the market "available capacity" over the winter months.

Figure 1 gives a breakdown of the accepted Flexible and Committed MW per season since the start of the STOR service. The blue line represents the sum of the maximum tendered MW from unique units from any tender round for each season. Capacity is as tendered, in a change to previous charts unsuccessful tenders from 2010 long term tenders have been removed from the maximum MW tendered. For seasons with tender rounds still to come, this figure will increase if units that thus far have not tendered for that season, tender in. The black line on the chart represents the outturn average availability for each season (where available). Premium Flexible tenders are included in the Flexible category for this chart.

Figure 2 gives the same data as figure 1 but using the general de-rating figures shown above. This demonstrates a much closer match between total de-rated MW and the actual outturn available MW.

It should also be noted that the Maximum tendered capacity is greater than (or equal to) the actual current capacity as some units have left the market or reduced their capacity.

Figure 1

Breakdown of Accepted Flexible and Committed MW per season

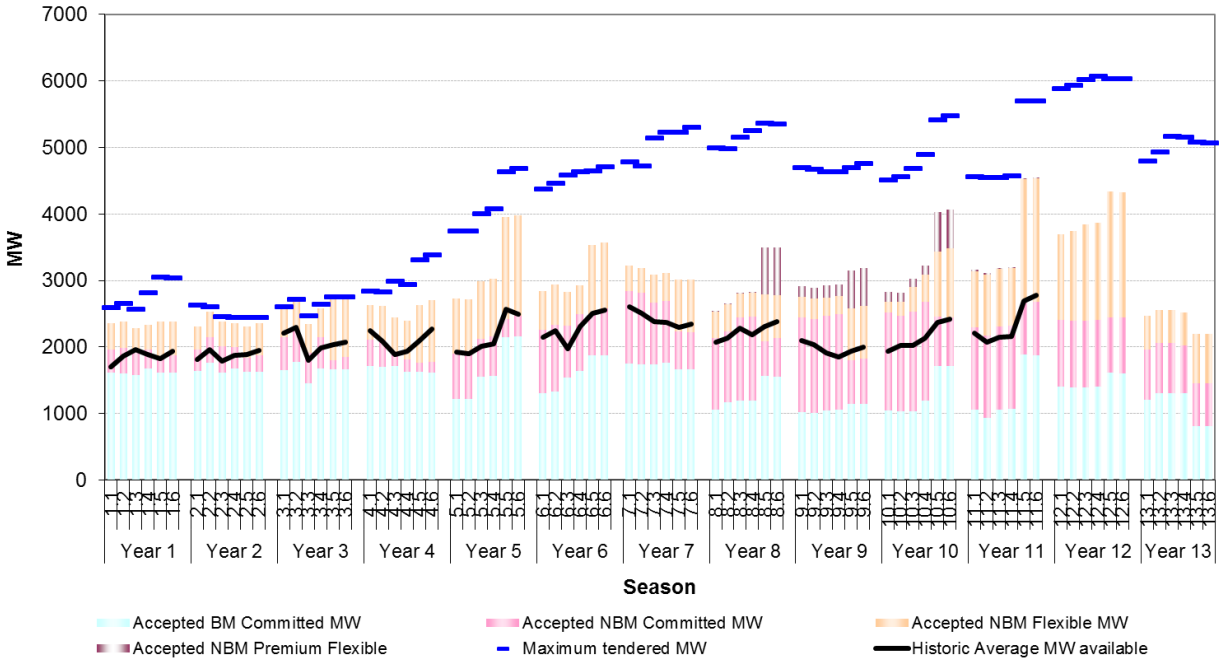
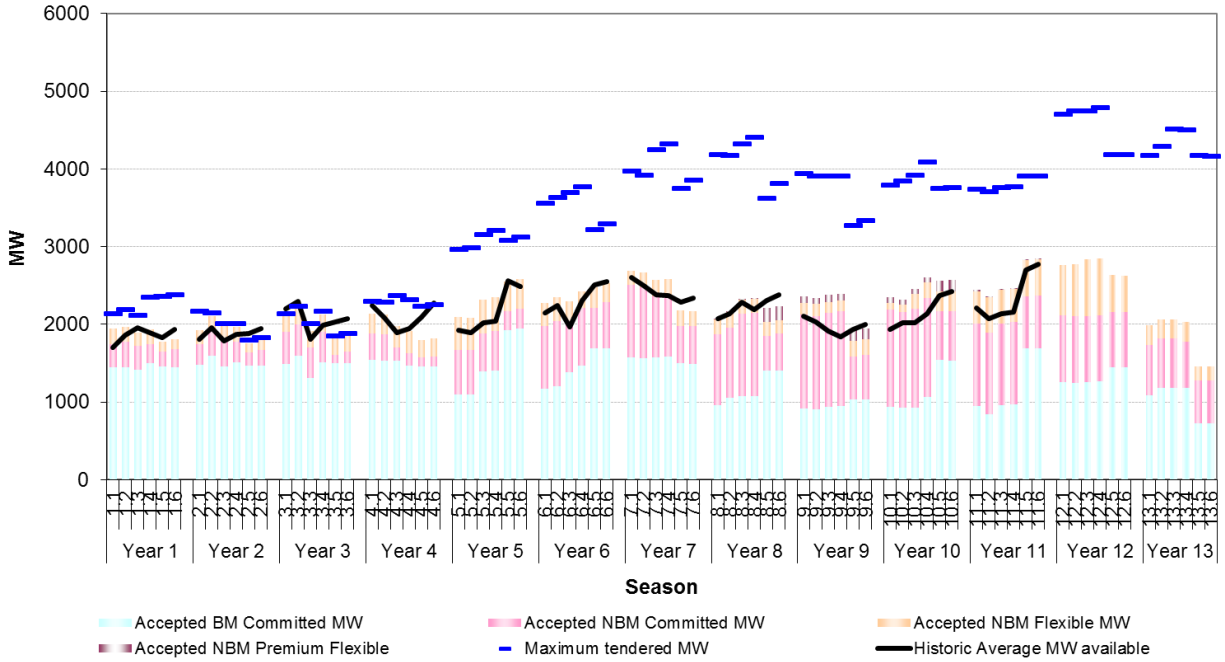


Figure 2

Breakdown of Accepted Flexible and Committed De-rated MW per season



Tenders received and assessment results

Table 1 below summarises the tenders received, it also summarises the total contracted and de-rated. A full breakdown of contracted and tendered data can be found in the Excel file.

	TR36 Tenders						Already contracted capacity	
Season Number	BM-C	NBM-C	NBM-F	NBM-PF	Total	De-rated Total	Total	De-rated Total
12.1	0	0	0	0	0	0	3695	2760
12.2	0	0	0	0	0	0	3736	2774
12.3	0	0	0	0	0	0	3845	2831
12.4	0	0	0	0	0	0	3870	2849
12.5	536	25	1748	0	2309	941	3021	2303
12.6	536	25	1744	0	2305	940	3015	2298
13.1	1398	558	148	0	2104	1807	1694	1348
13.2	1411	558	148	0	2117	1818	1778	1428
13.3	1688	558	148	0	2394	2068	1779	1429
13.4	1697	603	148	0	2448	2114	1737	1393
13.5	1869	383	203	0	2455	2058	1855	1285
13.6	1863	383	203	0	2449	2053	1855	1285

Table 2 below summarises the accepted units and the approximate requirement remaining for the next tender rounds.

	TR36 Tenders Accepted						Remaining
Season Number	BM-C	NBM-C	NBM-F	NBM-PF	Total	De-rated Total	Total
12.1	0	0	0	0	0	0	-
12.2	0	0	0	0	0	0	-
12.3	0	0	0	0	0	0	-
12.4	0	0	0	0	0	0	-
12.5	0	0	1311	0	1311	328	-
12.6	0	0	1307	0	1307	327	-
13.1	540	89	148	0	777	636	300
13.2	540	89	148	0	777	636	250
13.3	540	89	148	0	777	636	250
13.4	540	89	148	0	777	636	300
13.5	140	0	203	0	343	177	850
13.6	140	0	203	0	343	177	850

Successful Tenders in TR36

Year 12 (2018/19)

This tender round was the final opportunity to tender for seasons 12.5 and 12.6; as such the most economic tenders were accepted to provide sufficient volume to meet the optimal level.

Year 13 (2019/20)

This was the third opportunity for Year 13 (excluding long term tenders). A combination of the most economic all or nothing and tenders with no restrictions were accepted. Overall, we have a surplus of tenders for year 13 above our minimum requirement. We have a significant remaining requirement that we aim to fulfil within the future tender rounds if this is efficient.

Tables demonstrating the breakdown of accepted and rejected tenders and average prices have been moved to the MIR Excel file.

Expectations for TR37

This section is designed to clarify our views for the next tender round, including remaining requirement and likely intentions.

- **Year 13:** TR37 is the fourth opportunity (excluding long term tenders) for Year 13. A significant proportion of the requirement remains for all seasons. National Grid will accept only the most economic tenders. PF units will continue to be assessed at 0% availability during peak periods.
- **Year 14:** TR37 is the first opportunity for Year 14. We intend to procure only the most economic tenders.

Figure 3 presents the number of units and the total MW tendered and accepted for each season and each location.

Figure 3

SCOTLAND	Units tendered	Units Accepted	MW tendered	MW Accepted
12.1	-	-	-	-
12.2	-	-	-	-
12.3	-	-	-	-
12.4	-	-	-	-
12.5	-	-	-	-
12.6	-	-	-	-
13.1	-	-	-	-
13.2	-	-	-	-
13.3	-	-	-	-
13.4	-	-	-	-
13.5	1	-	40	-
13.6	1	-	40	-

SOUTH	Units tendered	Units Accepted	MW tendered	MW Accepted
12.1	-	-	-	-
12.2	-	-	-	-
12.3	-	-	-	-
12.4	-	-	-	-
12.5	85	70	1,055	741
12.6	85	70	1,055	741
13.1	23	11	870	338
13.2	23	11	858	338
13.3	23	11	865	338
13.4	24	11	919	338
13.5	22	8	899	293
13.6	22	8	893	293

NORTH	Units tendered	Units Accepted	MW tendered	MW Accepted
12.1	-	-	-	-
12.2	-	-	-	-
12.3	-	-	-	-
12.4	-	-	-	-
12.5	79	56	907	277
12.6	78	55	903	273
13.1	13	2	766	303
13.2	14	2	791	303
13.3	15	2	1,061	303
13.4	15	2	1,061	303
13.5	15	-	1,154	-
13.6	15	-	1,154	-

MULTIPLE	Units tendered	Units Accepted	MW tendered	MW Accepted
12.1	-	-	-	-
12.2	-	-	-	-
12.3	-	-	-	-
12.4	-	-	-	-
12.5	17	13	135	87
12.6	17	13	135	87
13.1	32	9	356	96
13.2	32	9	356	96
13.3	32	9	356	96
13.4	32	9	356	96
13.5	22	1	250	10
13.6	22	1	250	10

Prices

Figures 4 and 5 below show scatter plots of availability and utilisation price for each tender and for each season. The data is broken down into response time groups of >20 mins or <=20 mins, Flexible or Committed service and accepted or rejected tenders. These charts also display any units accepted as Premium Flexible, or rejected as Premium Flexible if they were not then assessed as Flexible. If a unit was rejected as Premium Flexible and then assessed as Flexible, they are represented on the chart as normal Flexible tenders. These charts also depict the accepted and rejected tenders from previous tender rounds. To keep this report short only seasons 2, 4 and 5 are displayed (these are the longest of each of the season pairs). The full data for all seasons is available in the MIR Excel file.

Figure 4 Year 12 Availability and Utilisation price charts

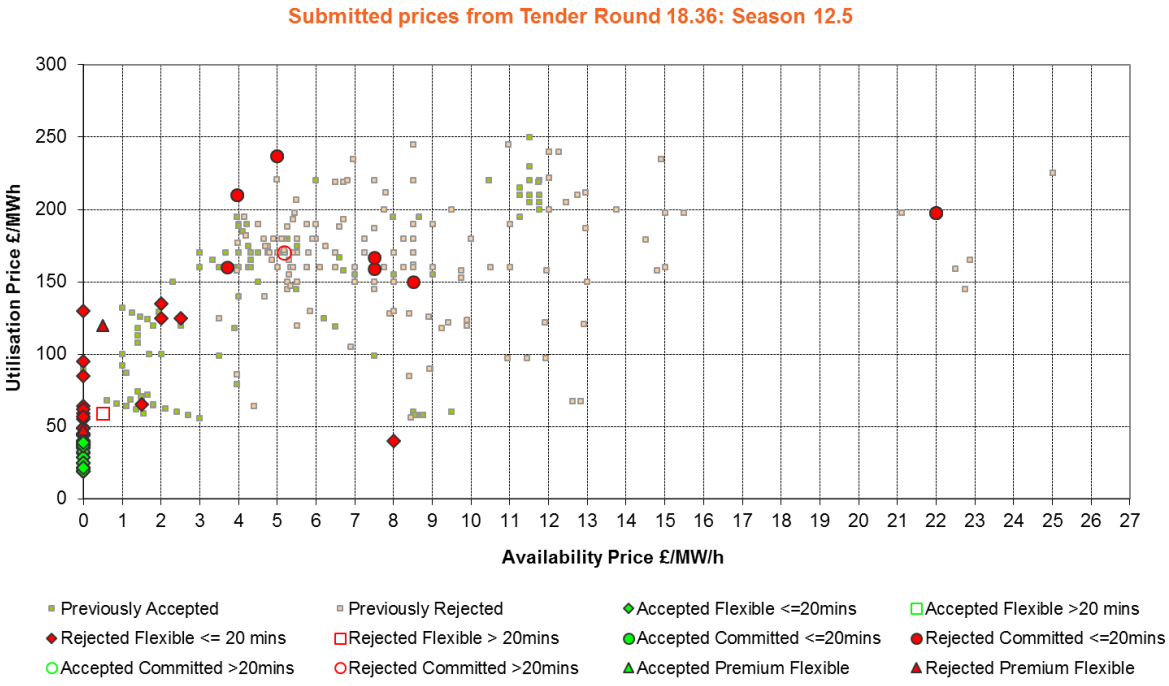
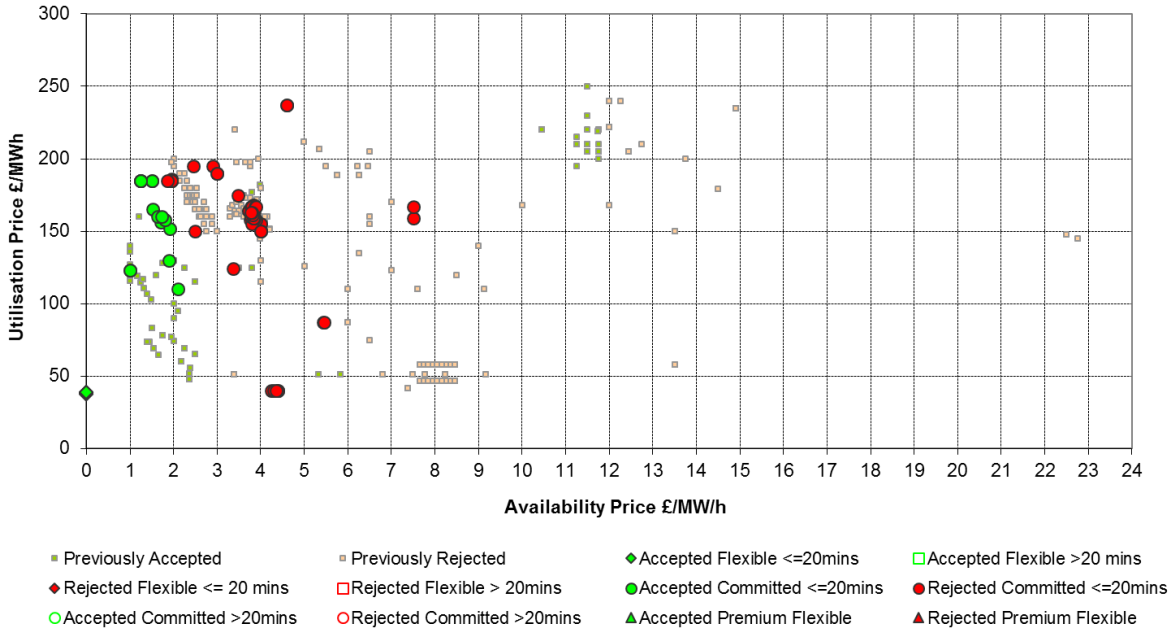
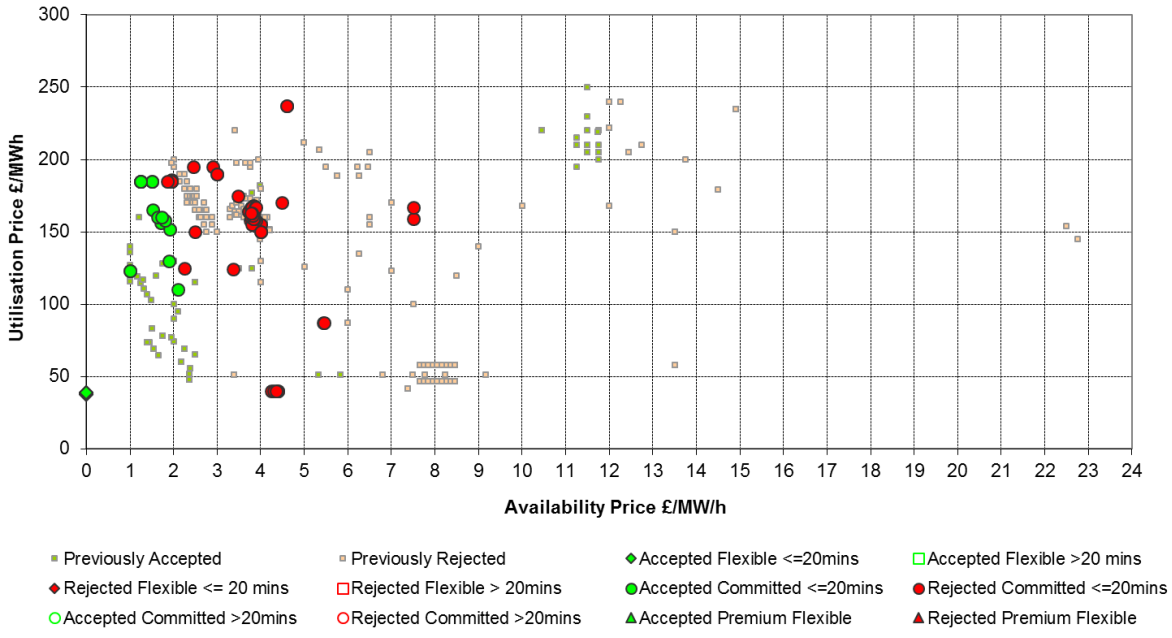


Figure 5 Year 13 Availability and Utilisation price charts

Submitted prices from Tender Round 18.36: Season 13.2



Submitted prices from Tender Round 18.36: Season 13.4



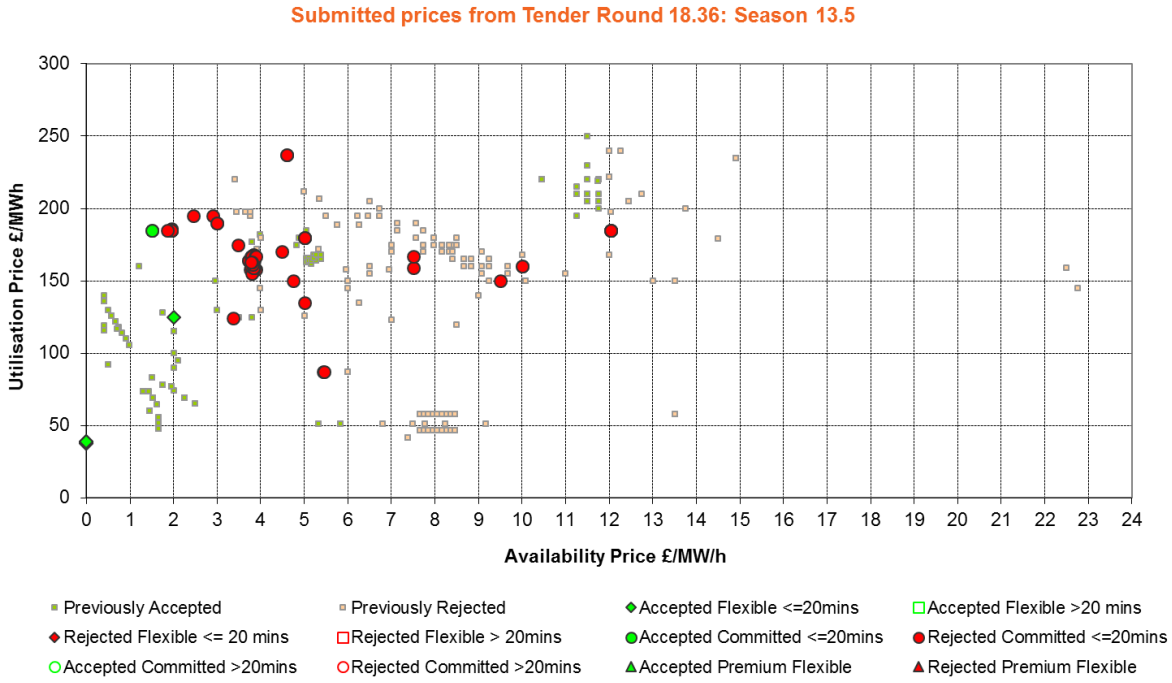


Table 3 below presents a summary of the highest accepted availability price for Committed and Flexible units with Premium Flexible tenders listed separately. The table also presents the highest and lowest Utilisation price accepted for each season as a guide. This information can be seen on the scatter plots above. For this report, we have added an extra column which is the highest availability price accepted that is not from an "all or nothing" tender. This change is to help distinguish between "all or nothing" prices that were accepted due to their benefits in other seasons to those accepted for their benefit in the current season.

Table 3 Summary of accepted Prices

Season Number	Marginal Availability price accepted £/MW/h	Marginal Availability price accepted non all or nothing	Marginal PF availability price accepted £/MW/h	Highest Utilisation Price accepted £/MWh	Lowest Utilisation Price accepted £/MWh
12.5	0.00	0.00	-	45.00	19.10
12.6	0.00	0.00	-	45.00	19.10
13.1	2.10	1.89	-	185.00	37.50
13.2	2.10	1.89	-	185.00	37.50
13.3	2.10	1.89	-	185.00	37.50
13.4	2.10	1.89	-	185.00	37.50
13.5	2.00	-	-	185.00	37.50
13.6	2.00	-	-	185.00	37.50

Figure 6 below shows the detail of all or nothing tenders. For simplicity, multiple tenders of the same price and tenders that have different prices across different seasons are removed from the following charts. Also, tenders which have varying service types across seasons (for example committed in seasons 1-4 and flexible in seasons 5-6 are removed). Tenders that were accepted are coloured green and rejected tenders coloured red.

Figure 6 All or nothing tenders.

Utilisation price and response time stacks

Figures 7 and 8 exhibit cumulative graphs. In these graphs the total accepted MW from previous tender rounds, up to and including the results from TR36, have been stacked per two categories: **Figure 7a & 7b** is ranked per utilisation price and **Figures 8a & 8b** per the response time of the unit. **The utilisation prices have had indexation applied (seasonal and annual).**

Figure 7a illustrates that for seasons 12.5 and 12.6 approximately 1750MW of STOR is contracted with a utilisation prices of £100/MWh or less.

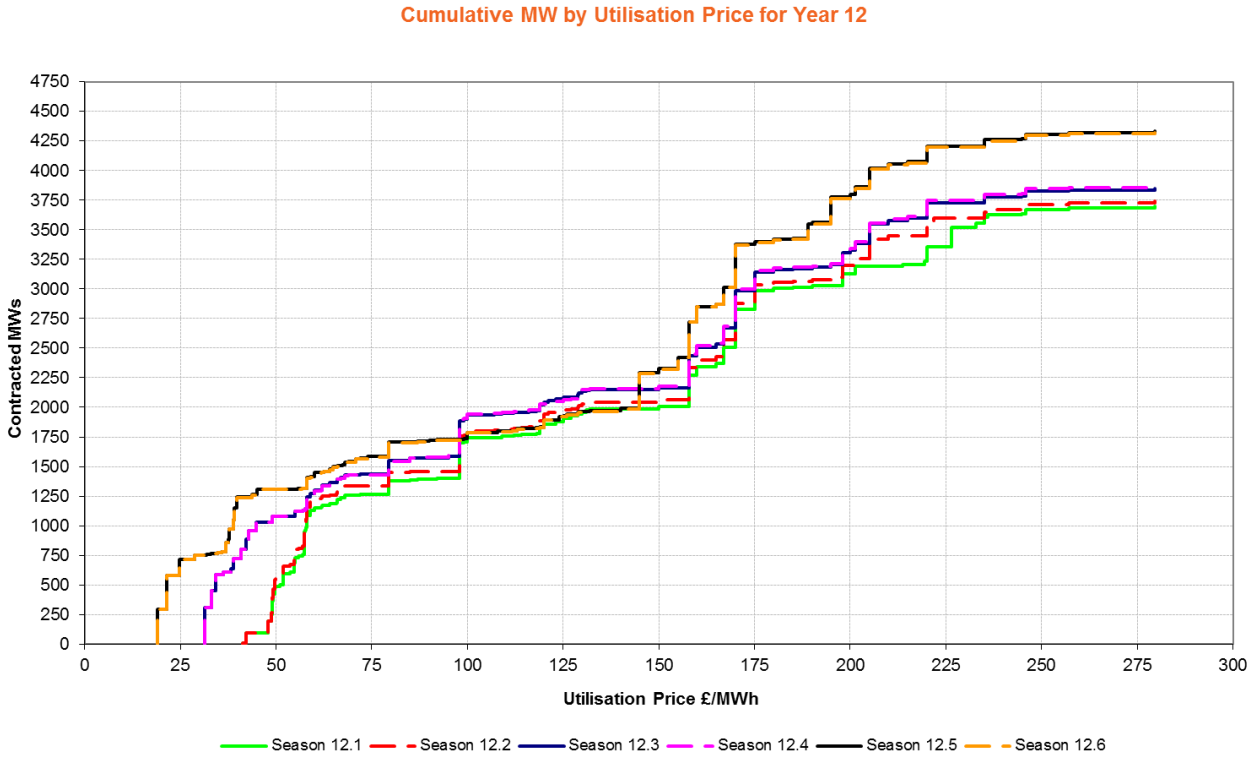


Figure 7b

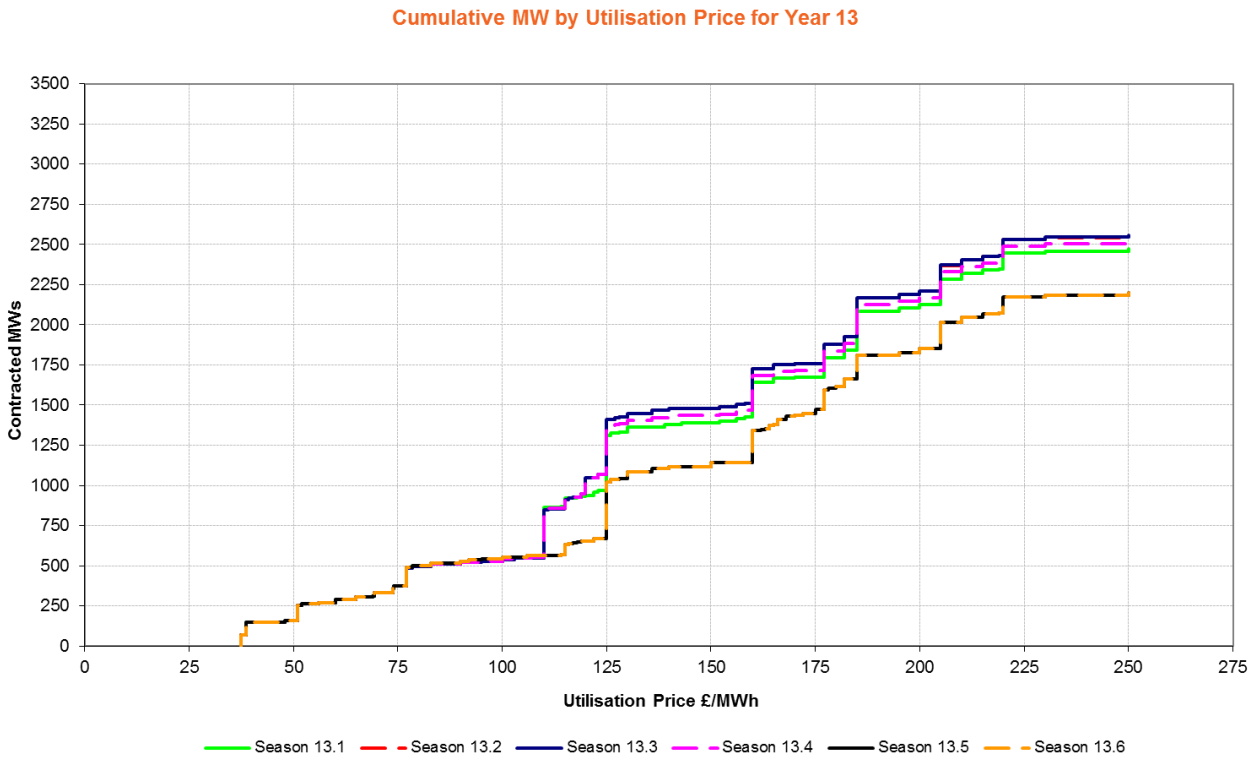


Figure 8a illustrates that for seasons 12.5 and 12.6 approximately 2300MW of STOR is contracted with a response time of 10 minutes or less.

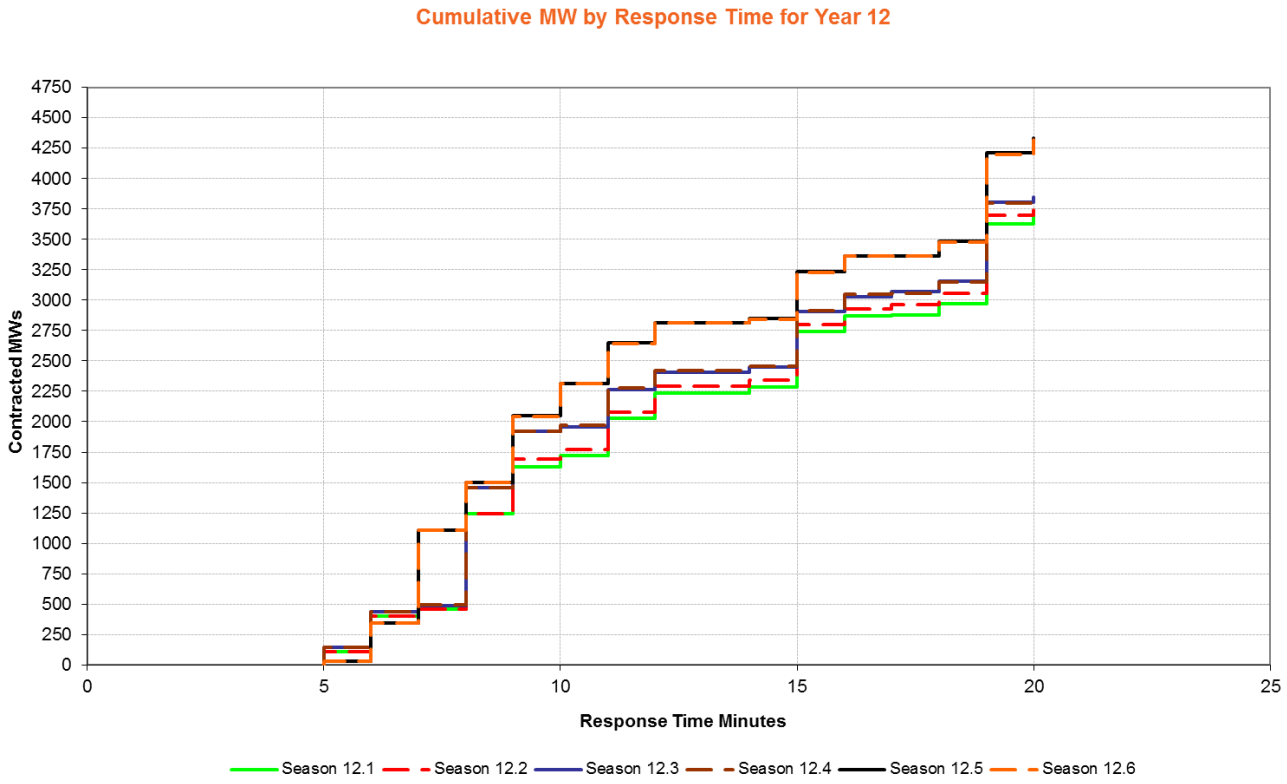
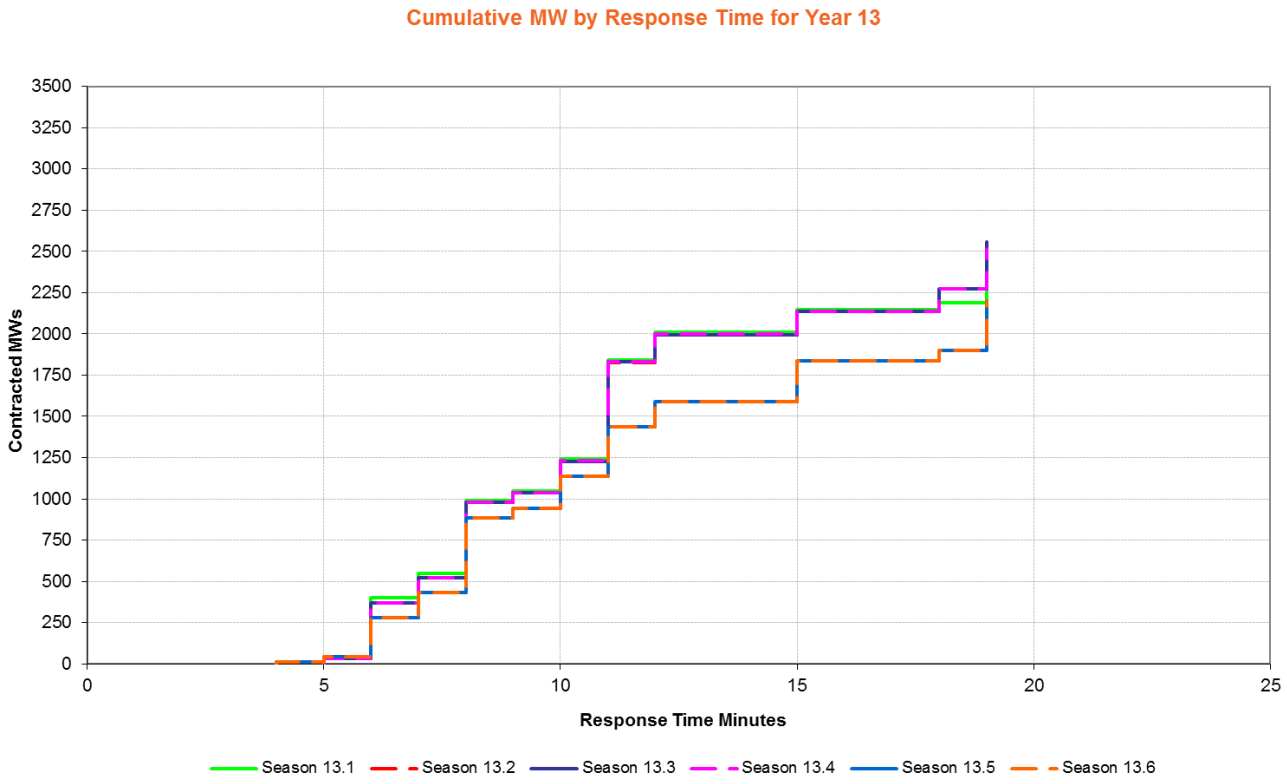


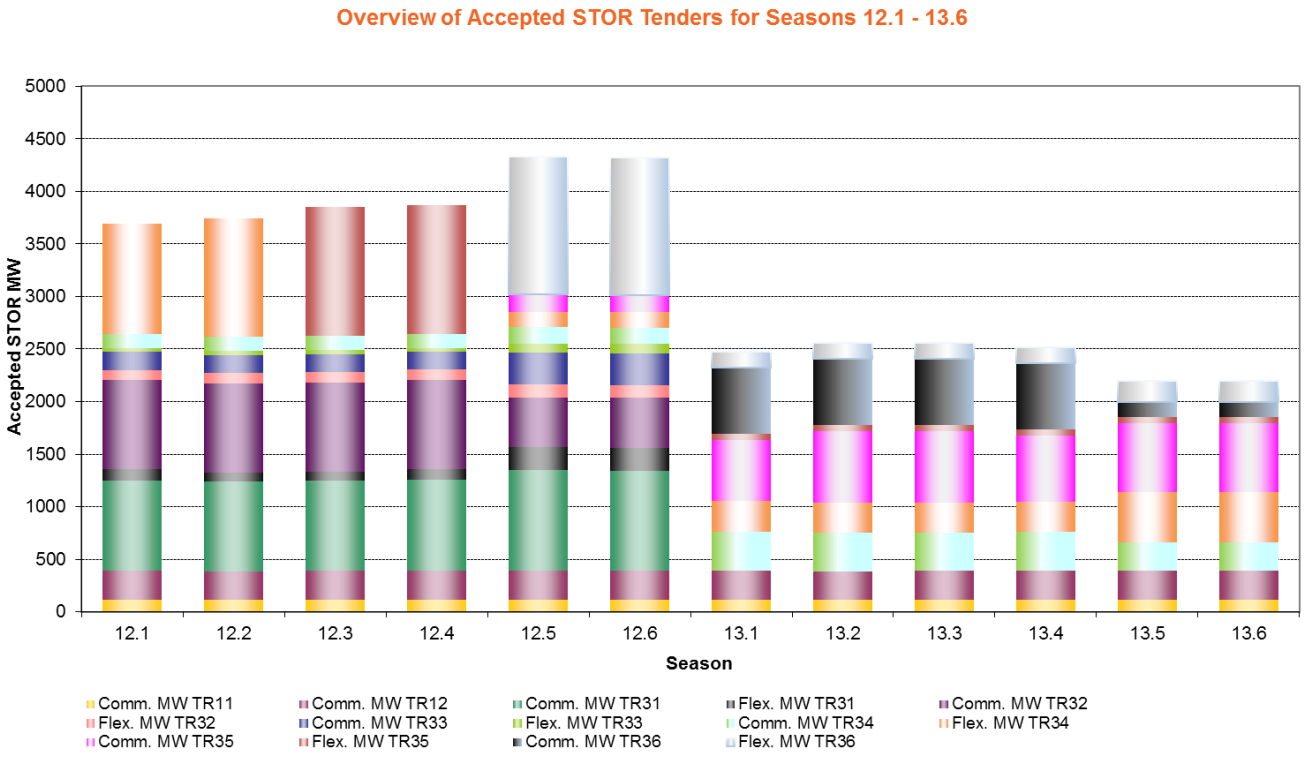
Figure 8b


Cumulative MW by Response Time for Year 13
Contracted MWs
3500
3250
3000
2750
2500
2250
2000
1750
1500
1250
1000
750
500
250
0
0
5
10
15
20
25
Response Time Minutes
Season 13.1
Season 13.2
Season 13.3
Season 13.4
Season 13.5
Season 13.6

Total Contracted Position

Figure 9 shows the breakdown of accepted volumes from all previous tender rounds across the seasons of Years 12 and 13. The table accompanying Figure 9 below displays the same data in table format split by Committed or Flexible. For this chart and table Premium Flexible units are classed as Flexible units.

Figure 9 Year 12 and 13 summaries by tender round



	Season	12.1		12.2		12.3		12.4		12.5		12.6	
	Service Type	C	F	C	F	C	F	C	F	C	F	C	F
Accepted MW	TR11	116		116		116		116		116		116	
	TR12	273		271		272		273		274		274	
	TR31	862	103	850	89	857	89	866	100	957	220	951	220
	TR32	852	96	848	96	848	96	852	96	474	119	474	119
	TR33	170	38	170	41	170	41	170	38	306	88	306	88
	TR34	134	1051	134	1124	134		134		153	148	153	148
	TR35						1225		1225	166		166	
	TR36										1311		1307
	Total	2407	1288	2389	1350	2397	1451	2411	1459	2446	1886	2440	1882

	Season	13.1		13.2		13.3		13.4		13.5		13.6	
	Service Type	C	F	C	F	C	F	C	F	C	F	C	F
Accepted MW	TR11	116		116		116		116		116		116	
	TR12	273		271		272		273		274		274	
	TR34	368	297	366	286	366	286	368	286	271	481	271	481
	TR35	578	62	677	62	677	62	632	62	652	61	652	61
	TR36	629	148	629	148	629	148	629	148	140	203	140	203
	Total	1964	507	2059	496	2060	496	2018	496	1453	745	1453	745

Appendix 1: Terminology and Definitions

High level description of STOR:

STOR is designed to give National Grid sufficient Operating Reserve to replace sudden generation losses, or unpredictable changes in demand between four hours ahead of real time and real time and requires a large proportion of units to be available within 20 minutes. STOR also recognises that other potential reserve providers who cannot meet the 20 minute response time criteria can still be of value in meeting our reserve requirement. Hence a key aspect of the definition of the STOR product is that it extends the maximum response time to 240 minutes to allow alternative providers to participate. How value is placed on these units by National Grid is different to the sub 20 minute notice units as the longer notice units compete mainly with alternative options available in the Balancing Mechanism with equivalent response times. Location, reliability and utilisation parameters are also important elements of the STOR assessment.

The Committed service applies to all providers who wish to make themselves available for all required windows nominated by National Grid. Both BM and NBM providers can tender for this service. The Flexible service applies only to NBM providers and allows the provider to make the unit available or unavailable for particular windows. This availability is assessed on a week-ahead basis and providers are notified if their service is required or not. It is at the discretion of National Grid whether a unit is accepted or rejected at the week-ahead stage and this decision will be based on the same assessment principles as the main tender assessment. The increased accuracy of the week-ahead forecast means that some factors may have more importance such as location if specific constraint issues are forecast. Both Services attract an availability payment paid on a £/MW/h basis when available within defined windows and a utilisation payment on delivery of STOR MW when instructed by National Grid paid on a £/MWh basis.

A summary of the STOR service can be found on our website at the following link:

https://www.nationalgrideso.com/sites/eso/files/documents/Short%20Term%20Operating%20Reserve%20%28STOR%29%20Interactive%20Guidance%20V1.0_0.pdf

Appendix 2: Market Information Report

Accepted and Rejected Tenders TR36: A list of information containing prices, response time, location and unit type of all accepted and rejected tenders from this tender round, previously found in the appendix to the market information reports, can now be downloaded, in spreadsheet format, from the Market Information section of the STOR website:

https://www.nationalgrideso.com/balancing-services/reserve-services/short-term-operating-reserve-stor?market-information

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Appendix 3: Season Reference

The following tables summarise the season information for the current year (Year 12) and the following year (Year 13).

Year 12 Seasons - 2018/19							
		WD		NWD		Indicative Hours	
Season	Dates	Start Time	End Time	Start Time	End Time	WD	NWD
1	05:00 on Sunday 1st April 2018 - 05:00 on Monday 30th April 2018	06:00	13:00	10:00	14:00	161.00	24.00
		19:00	21:30	19:30	21:30	57.50	12.00
2	05:00 on Monday 30th April 2018 - 05:00 on Monday 20th August 2018	06:30	14:00	10:30	13:30	705.00	54.00
		16:00	18:00	19:30	22:00	188.00	45.00
		19:30	22:00	-	-	235.00	-
3	05:00 on Monday 20th August 2018 - 05:00 on Monday 24th September 2018	06:30	13:00	10:30	12:30	188.50	12.00
		16:00	21:00	19:30	21:30	145.00	12.00
4	05:00 on Monday 24th September 2018 - 05:00 on Monday 29th October 2018	06:00	13:00	10:30	13:00	210.00	12.50
		17:00	20:30	17:30	20:00	105.00	12.50
5	05:00 on Monday 29th October 2018 - 05:00 on Monday 28th January 2019	06:00	13:00	10:30	13:30	525.00	48.00
		16:00	20:30	16:00	19:30	337.50	56.00
6	05:00 on Monday 28th January 2019 - 05:00 on Monday 1st April 2019	06:00	13:00	10:30	13:00	378.00	22.50
		16:30	20:30	16:30	20:00	216.00	31.50
						3,451.5	342.0

Season	WD	NWD
1	23	6
2	94	18
3	29	6
4	30	5
5	75	16
6	54	9

Year 13 Seasons - 2019/20							
		WD		NWD		Indicative Hours	
Season	Dates	Start Time	End Time	Start Time	End Time	WD	NWD
1	05:00 on Monday 1st April 2019 - 05:00 on Monday 29th April 2019	06:00	13:00	10:00	14:00	161.00	20.00
		19:00	21:30	19:30	21:30	57.50	10.00
2	05:00 on Monday 29th April 2018 - 05:00 on Monday 19th August 2019	06:30	14:00	10:30	13:30	705.00	54.00
		16:00	18:00	19:30	22:00	188.00	45.00
		19:30	22:00	00:00	00:00	235.00	
3	05:00 on Monday 19th August 2019 - 05:00 on Monday 23rd September 2019	06:30	13:00	10:30	12:30	188.50	12.00
		16:00	21:00	19:30	21:30	145.00	12.00
4	05:00 on Monday 23rd September 2018 - 05:00 on Monday 28th October 2018	06:00	13:00	10:30	13:00	210.00	12.50
		17:00	20:30	17:30	20:00	105.00	12.50
5	05:00 on Monday 28th October 2018 - 05:00 on Monday 27th January 2019	06:00	13:00	10:30	13:30	525.00	48.00
		16:00	20:30	16:00	19:30	337.50	56.00
6	05:00 on Monday 27th January 2019 - 05:00 on Wednesday 1st April 2020	06:00	13:00	10:30	13:00	392.00	22.50
		16:30	20:30	16:30	20:00	224.00	31.50
						3,473.5	336.0

Season	WD	NWD
1	23	5
2	94	18
3	29	6
4	30	5
5	75	16
6	56	9