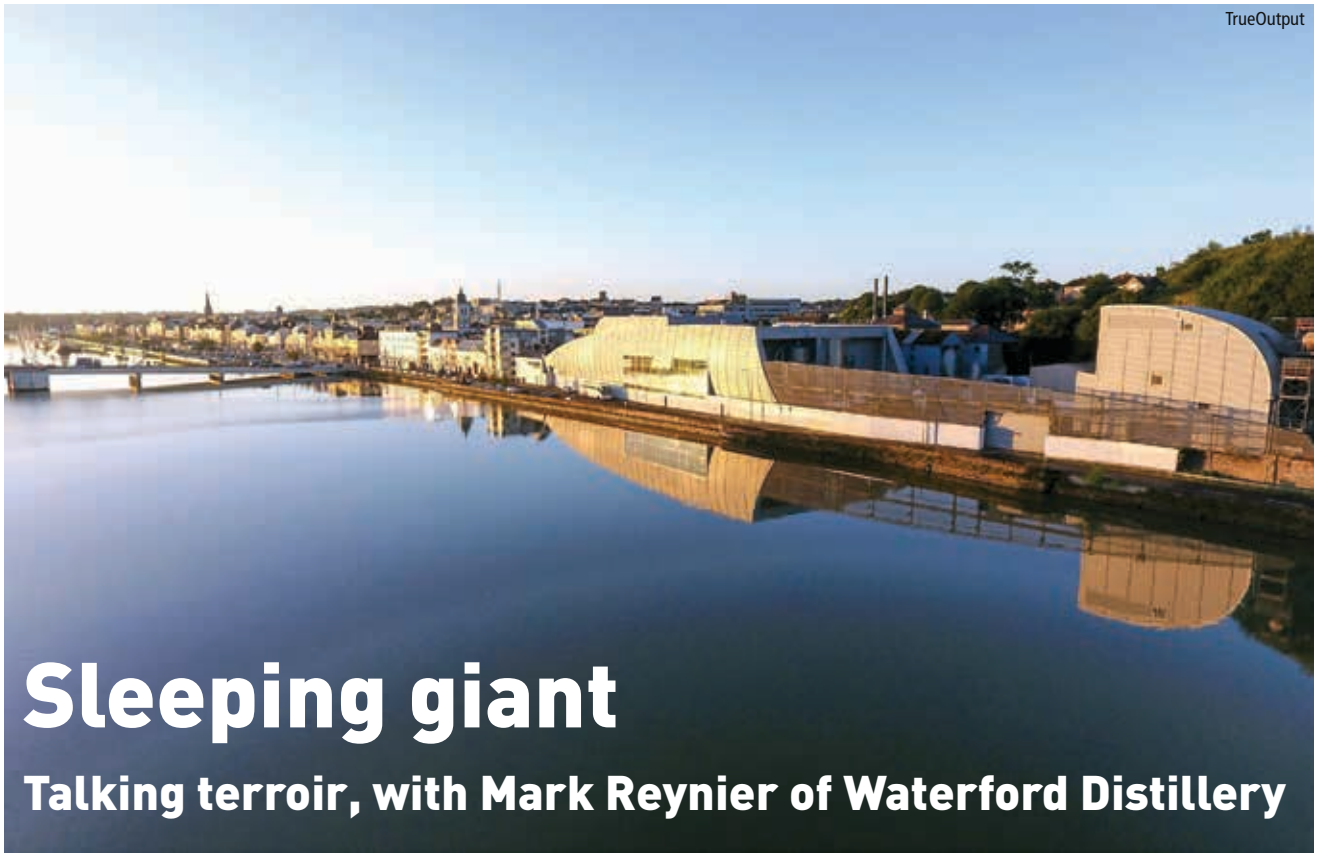


TrueOutput

Sleeping giant

Talking terroir, with Mark Reynier of Waterford Distillery

By Dan Griffiths

On the bankside of the river Suir, on the outskirts of Waterford, Ireland, lies a remarkable distillery that is quietly preparing to make a few ripples, and perhaps some waves, on the smooth waters of Irish whisky – the absent 'e' being just the first small pebble dropped into the pool.

Waterford Distillery is the latest project of Mark Reynier, lately of Bruichladdich fame, and a continuing disruptive force in the world of whisky. Now turning his attention to Irish whisky, where his ambition is to fully realise the work that was begun on Islay – and to provide proof of the significant role that terroir plays in whisky flavour.

Whilst at Bruichladdich, Reynier became interested in the influence that the soil, climate, air quality and the many other factors that contribute to terroir have upon the spirit produced. Entering distilling from the wine world, this is perhaps not surprising, as the importance here is well established.

The main distillery building from inside the compound

However, despite the success of Bruichladdich and its disruption of the Scotch whisky market, the full extent of the project was not to be realised on Islay. This was largely due to climatic and logistical complications, but Reynier also found difficulties in attempting to alter traditional practices at the pace that he would have liked.

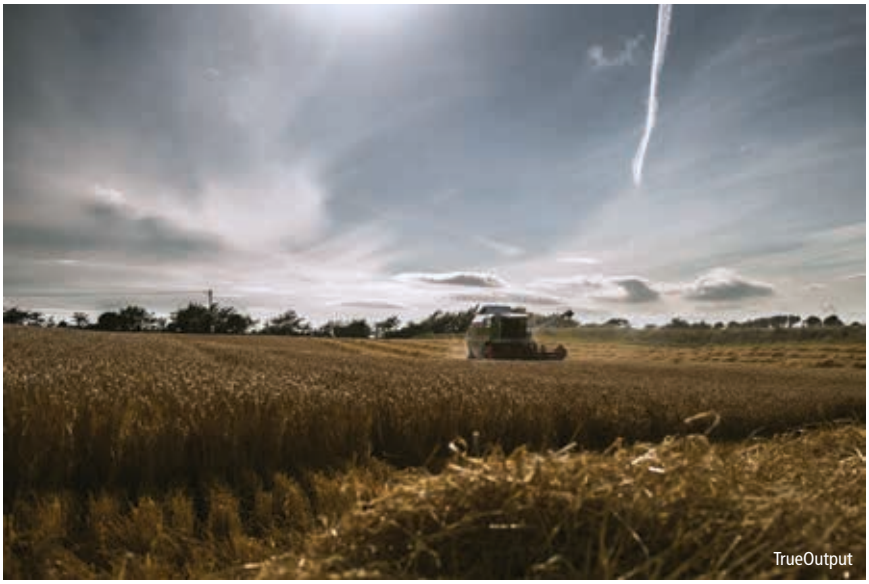
After the sale of Bruichladdich to Rémy Cointreau in 2012, Reynier found himself with the means and opportunity to attempt a second realisation of this vision. The location that presented itself was doubly fortuitous, for not only did it represent a state-of-the-art production facility, it was located in the centre of one of the finest barley-growing regions of Ireland.

The facility was constructed in 2004 by Diageo, to provide the Guinness essence used in the production of the famous 'black stuff' worldwide. After production was relocated to St. James' Gate in 2013 the site was mothballed until it was purchased by Reynier and his investors in 2014 for a reported €7.2 million, something of a bargain considering the quality of the facility, and into which Diageo had ploughed around £40 million. The purchase of the facility included virtually the entire production plant, apart from the specialised barley roasters, which had been shipped up to Dublin.

The site at Grattan Quay has in fact been home to a brewery since 1792, when William Strangman built his brewery here. Fascinatingly, much of the Strangman plant still exists in the old buildings on site in a museum-like state, including the old mash tuns from Robert Morton and Co. of Burton, which date from 1900.

Terroir

Terroir is of course at the heart of Waterford Distillery's ethos. The premise might seem deceptively simple: take the best quality barley from around 40 local farms and then keep that barely separate right the way through the production process, whilst maintaining consistency in production to ensure that



Bringing in the harvest

each batch is treated in the same way.

The one variable in the process is then the barley, and the terroir in which it was grown. This should then present itself in the glass. The execution of this concept has, however, taken a great deal of planning, logistical wrangling, and precise data collection.

"Provenance is king" at Waterford, and it is proud of the barley grown in this region of Ireland, and of the farms that produce it, including organic and biodynamic farms. These cover 19 different soil types and are located on a variety of aspects and micro-climates, contributing to the unique flavour characteristics that are displayed in the spirit.

The details of the terroir are recorded in meticulous detail, as the first stage in a comprehensive digital fingerprint that will be available for each bottle of whisky produced.

The specifications required are tough, however, and so each year not all of these farms' barley will make it through to distilling at Waterford. However, by approaching the project as a collaboration between farm and distiller, Reynier hopes to enthuse the farmers and to produce ever more outstanding harvests.

Inviting the farmers on this journey and getting their 'buy in' to the concept has been something that Reynier sees as a vital piece of the machinery. Being able to present a sample of new-make spirit to the farmer, from their own fields, is a very powerful gesture, allowing for a new and intimate connection to the land.

Barley is stored near Kilkenny in the purpose built 'Barley Cathedral', which provides separate storage bins for each farm. Over a four week period, almost 4,000 green tonnes of barley is delivered to the site, and so the dedicated Alvan Blanch dryer is an essential item of equipment here. Each farm produces around 130 green tonnes, which becomes 100 tonnes after drying.

Malting is then carried out at Minch Malt in Athy, who has provided a dedicated stream for Waterford to ensure that the possibility of mixing between batches cannot occur. Malting is performed to Waterford's precise specification without exogenous additions, such as gibberellic acid. 75 tonnes of malt are produced from each batch, which is delivered directly to the distillery for production.

Wash production

The production of spirit occurs at the 'Facilitator', as the old Guinness essence brewery has now been renamed – due to the state-of-the-art equipment left behind by Diageo – which has enabled Waterford to extract the maximum amount of flavour from its barley.

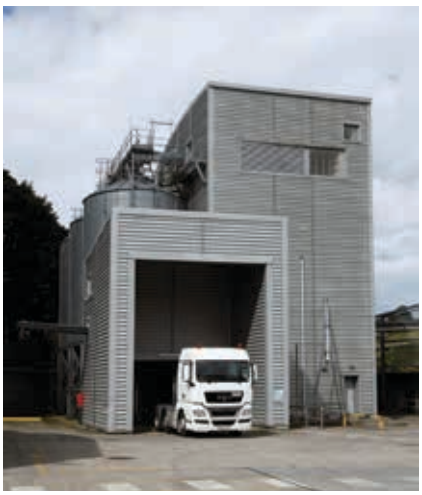
Malt is stored in three silos, each with a capacity of 125 tonnes, but filled with just the 75 tonnes that makes up a batch from a single farm. Bulk malt handling is carried out in a separate facility some distance from the main building prior to being passed through a cleaner and blown pneumatically to a holding case outside the brewery prior to each brew in 9.5 tonne batches.

The purpose-built 'Barley Cathedral' in Kilkenny

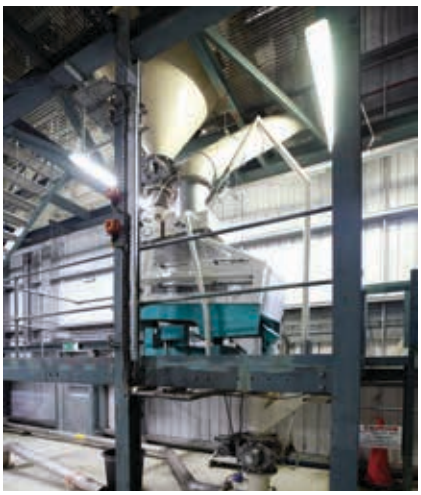
Malt is ground to a fine grist using a Meura Hydromill, which mills the grain underwater to greatly aid in hydration and eliminates the production of dust. The 9.5 tonnes of malt are milled in around 90 minutes, and mashed into the conversion vessel at a ratio of 2.5:1 water to grain.

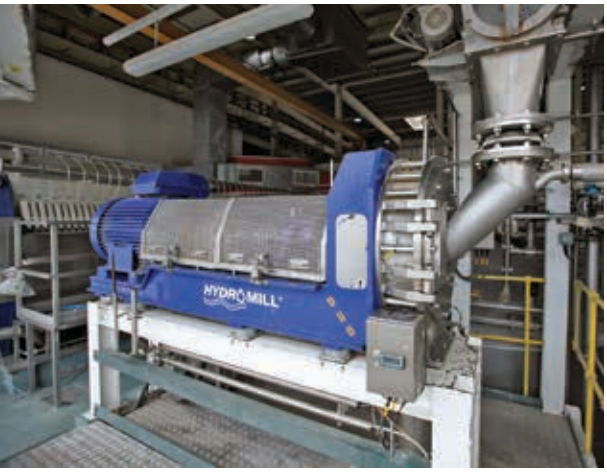
Water is drawn from the distillery's own on-site well, which taps into a volcanic aquifer. One of the original reasons for Strangman constructing his brewery here, the water is excellent for brewing and requires no adjustments for pH or mineral composition.

The mash is held at 48°C for 60 minutes, rising to 65°C for a further 60 minutes, after which a conversion check is performed. If the mash has converted, the temperature is increased to 68°C for 25 minutes, or if not, is held at 65°C until conversion is completed.



The dedicated on-site malt handling facility



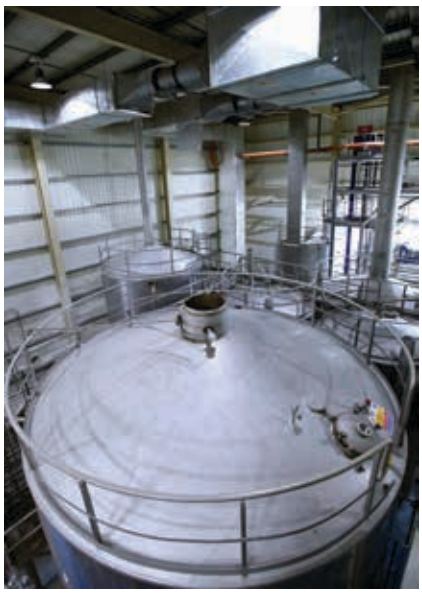


The Meura Hydromill

Mash separation is performed via a Meura 2001 mash filter, producing an average of 42,500 litres at a specific gravity of 1.067. As one would expect from a mash filter, efficiency is high, being always over 95%. Two brews go into each washback, taking a total of eight hours each, with two brews per day and eight over the week.

The mash filter is a rarity amongst single malt whisky producers, but Reynier believes this is one of the key factors that enables him to extract the maximum terroir contribution from the barley.

Wort is cooled to 24°C on the way to the washback and pitched with re-hydrated Pinnacle distillers yeast from AB Mauri. The temperature is allowed to free rise to 33°C, where it is held by the washbacks cooling jackets. Primary fermentation lasts between 60-70 hours, with a further 70-100 hours for secondary fermentation. The wash has an average final gravity of 0.9995, resulting in an ABV of 8.5%.



View over the brewing department, with mash conversion vessel at back right. In the foreground is the unused wort kettle

The Meura 2001 mash filter

Distillation

The two stills were acquired during the Bruichladdich years, as part of a job-lot of assorted equipment sourced from the defunct Inverleven distillery. This Scottish lowland distillery existed, Russian doll like, inside the sprawling Dumbarton complex that was primarily dedicated to grain whisky production.

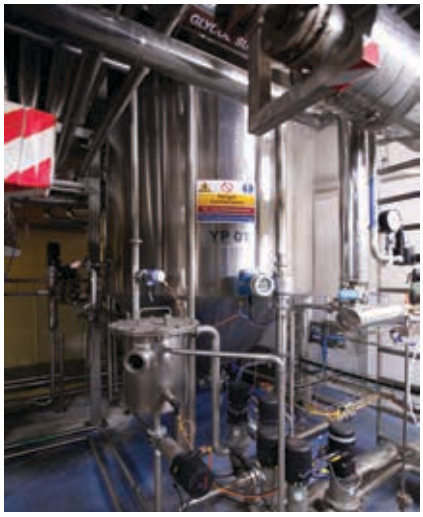
Constructed by Blairs of Glasgow in 1972, the stills were built in the Speyside style, with long tapering necks designed to give a light, fruity and floral character to the spirit. Originally designed to produce single malt for Ballantine's blends, the spirit produced apparently never found lasting favour with the blenders – and by 1991 the distillery was mothballed.

The stills had been earmarked for use in a revival of Islay's Port Charlotte distillery, but that was not to be, and instead the spirit still lay on the dockside, while the wash still sat for many years as ornamentation outside Bruichladdich. The stills were refurbished by Forsyths, which also managed their installation at Waterford and it is estimated that they should provide at least 10 years' service before a further overhaul or replacement is required.

Resplendent on their high mountings, the two stills tower above visitors on entering the distillery and present an imposing reminder of heritage amongst the ultra-modern high technology of the former brewery.

The wash still has a working capacity of 24,000 litres, and is heated via an external heat exchanger, through which the wash is recirculated. It is charged with 17,100 litres, about 71.5% capacity, at a time, which allows for greater copper contact and sulphur removal.

Wash is pre-heated to 67°C on the way to the still, and heats rapidly under automatic control to 89°C. The steam is then slowed and at 93°C control is switched to manual to adjust the flow to no more than 1000l/hr. A wash distillation lasts eight hours,



The yeast store and propagation facilities

producing an average 6,600 litres of low-wines at 25% ABV when combined with the foreshots and feints of the last spirit distillation. A low-wines receiver collects two wash distillations for spirit distillation.

The 17,000-litre spirit still is charged with 11,600 litres at a time, again allowing for increased copper contact. An internal steam coil heats automatically to 87°C after which the steam flow is reduced and manual control takes over. As the foreshots come across, steam flow is no more than 250l/hr.

The cut to the hearts is decided by nosing and the steam is increased to a maximum of 450l/hr for collection. When the feints are detected, the cut is made and the steam flow increased to 1,600 l/hr. The spirit distillation lasts on average 10 hours, producing around 1,540 litres of alcohol, with the new make spirit being 71% ABV.

The new-make spirit is stored for collection in the tanks previously used for the ethanol recovered during Guinness essence production, before transport to the cask racking and warehousing facility. Current production runs at 1 million litres per year, however, this can be raised to 3 million per year, using the current stills. By

The 1000hL washbacks and valve matrix

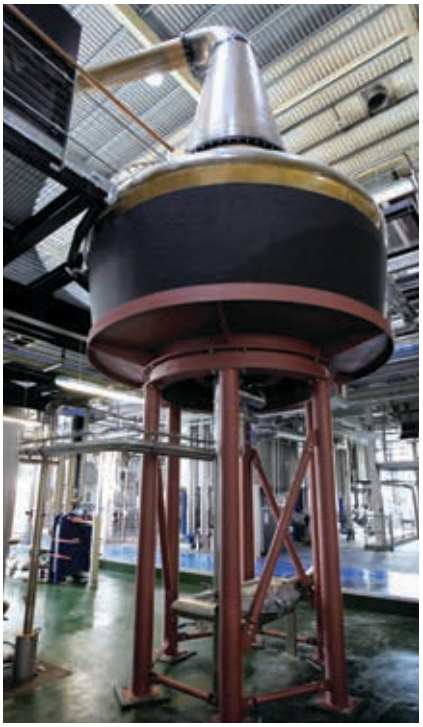
The wash still during its time at Bruichladdich

utilising the Sigmatec vacuum column still, previously used to de-alcoholise the Guinness essence, to produce grain whisky, capacity could even be as high as 8 million litres of alcohol per year.

Maturation

New-make spirit is transported by tanker to purpose-built warehousing facilities in nearby Ballygarran, where there will be four warehouses, each with a capacity for 7,500 casks, by the end of the year. Built in the traditional style to allow the passive circulation of the cool sea breeze, Reynier is keen to stress the importance he places on maturation in proximity to the marine air.

Readers will be familiar with dimethylsulfide (DMS), but perhaps less aware that it is produced in vast quantities by marine plankton, and in combination with various algal phero-



The stills mounted high above the distillery floor

mones and phenols is responsible for the unmistakable scent of the sea.

Reynier believes these distinctive aromas can, over the years, work their way through the wood and into the maturing whisky, with the cycles of heating and cooling allowing the casks to 'breathe in' these distinctive aromas which are then subtly infused in the spirit. Of course, the quality of the terroir is just as important here as it is in the barley field.

The cask population is made up of 50% ex-bourbon, 20% virgin US oak, 15% premium French oak and 15% *Vins doux naturels,* these being previously used for a range of fortified wines, such as port, sherry, madeira and marsala. The spirit from each farm will be aged in exactly the same combination of oak, maintaining the control throughout the whole of the production process.

The are no plans for 'finishing' whisky in novel casks, with Waterford preferring to achieve the desired flavour profile from careful selection of wood up front. Reynier states that 25% of production costs are being spent on oak.

Data

The element that binds the project together is data. On the surface, this might not seem worthy of much excitement, unless you're collecting the duty, but at Waterford Distillery the key to the entire project is being able to demonstrate the provenance of its whisky in minute detail.

The records kept are meticulous, with extensive documentation being produced for each farmer's batch of grain as it is distilled. These records form the cornerstone of a digital fingerprint that can be produced for each bottle, allowing the consumer to view data on the variety of barley, the farm and soil type, and production parameters.

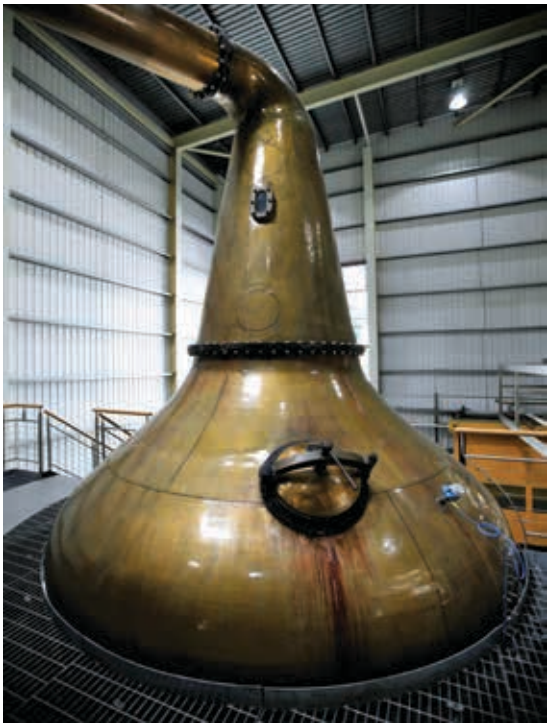
It is hoped that the data will also provide the substantive evidence to prove the importance of terroir, as part of a '*Terroir Proving Project'* being conducted in collaboration with Cork University.

The hundreds of data points that are collected should start to allow Waterford to understand the contribution to flavour of all these factors, and then look at how they may be controlled to enhance certain aspects. The project is still young, but some early indications suggest that sandy soils produce a more floral character in the spirit.

The results, when available, are sure to be of interest to distillers worldwide and may provide a fascinating insight into how barley-growing conditions manifest themselves in the final product.

Early impressions

I was fortunate enough to sample some of the 2016 new-make and the



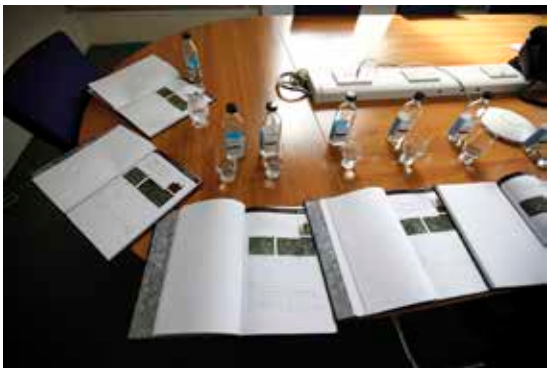
The 24,000 litre wash still

The 17,000 litre spirit still and the Forsyths spirit safe

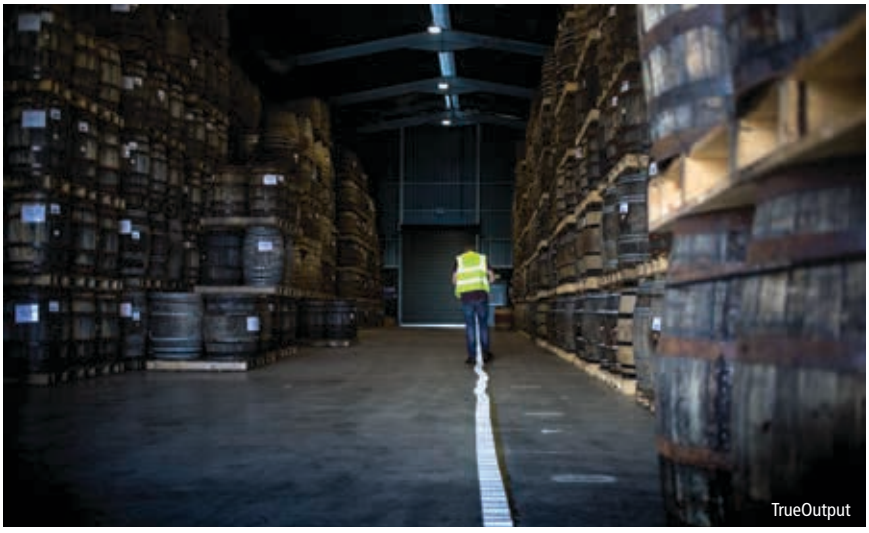
Arthur watches over the new-make spirit

maturing spirit, and was surprised by the differences between the individual farms. Nosing new-make from Thomas Fennelly's barley against that of John & Pierce Cousins, the differences were profound. The former having deep and mellow notes with the latter expressing bright citrus character. In this case there was a varietal difference as well as soil type, so the factors are complex, but no less intriguing in their possible application.

We also sampled a number of the smaller casks which form the reference library of each and every batch distilled to date. None of the spirit could yet be called whisky, as the oldest was not yet two years old, however, the maturity of some were remarkable. The differences between farms were evident once more, and



Nosing the new-make spirit. Extensive documentation is available for each batch



Casks of maturing spirit at the Ballygarran warehouse

demonstrated clearly the importance of the project.

Releases

When might we expect to see the first releases from Waterford? On that I have very little information, as Reynier would understandably not be drawn on a date. "When it is ready?", will just have to do for the time being – as being well financed and clear in its vision of perfection, Waterford is under no pressure to put out early releases to fill the coffers.

At present, Reynier and Co are content to quietly build stock, distilling 24/7, so that they may be properly prepared. Learning from the Bruichladdich experience, where demand vastly outstripped supply, they are determined to deliver on their promise, and have a healthy stock ready to release when the time comes.

We might speculate that single farm releases will be a staple output, but again, the exact nature of these in terms of maturity and cask type are not yet known. The aim is to produce a supremely balanced whisky that is greater than the sum of its parts. The wood should not overpower the barley, or character from the fermentation. All of the 'elements' have their own part to play in producing the whisky, but should not be seen to be shouting out above all others.

It is for this reason that we are unlikely to see a peated malt whisky from Waterford. Although there are some truly excellent examples of such a style, Reynier feels that this element would disrupt the harmony, overshadowing the contribution of terroir.

As the whisky develops, it will be released at the point of optimal flavour, regardless of age, with the intention of producing, in Reynier's words: "The most profound single malt whisky in the world."

Acknowledgements

Thanks to Mark Reynier, Distillery Manager Paul McCusker, Head Distiller Ned Gahan, Head Brewer Neil Conway and Chief Engineer Anthony Brazil for their time and assistance in producing this article.

The cask library used to monitor the developing spirit