

Ref: P19-019 Glyn Jones NA \ GJ APP LET

22 July 2019

Permitting Receipt Centre
Natural Resources Wales
Ty Cambria
29 Newport Road
Cardiff
CF24 0EY

Dear Sir/Madam,

THE WATER RESOURCES (TRANSITIONAL PROVISIONS) REGULATIONS 2017

HG & E JONES

APPLICATION FOR A NEW GROUNDWATER ABSTRACTION LICENCE FOR A BOREHOLE AT NEW HOUSE FARM, LUDCHURCH, NARBERTH, PEMBROKESHIRE, UNDER THE 'TRANSITIONAL REGULATIONS'

Please find enclosed a formal abstraction licence application on behalf of 'HG & E Jones', to cover the historic abstraction of groundwater for milk production, parlour & machinery washdown, fodder beet washing and domestic use from a borehole at New House Farm, Ludchurch, Narberth, Pembrokeshire.

Enclosed are:

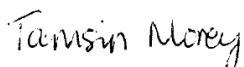
- Application form WRH along with associated Figures and a Continuation Sheet for further information.
- A letter of authorisation from HG & E Jones allowing Envireau Water to sign forms relating to the abstraction licence application and liaise with Natural Resources Wales on their behalf.
- Supporting evidence of historic abstraction.

Please contact us on 01332 871882 to arrange payment of the £135 application fee by credit card.

We look forward to receiving notification of a "valid application" in due course but in the meantime if you would like to discuss any aspect of the application then please do not hesitate to contact us.

Please ensure that all correspondence regarding the application is directed to myself (the Agent) so we are able to respond promptly.

Yours faithfully,



Tamsin Morey MSc CEnv
Principal Water Resources Specialist

22 July 2019

Permitting Receipt Centre
Natural Resources Wales
Ty Cambria
29 Newport Road
Cardiff
CF24 0EY

Dear Sir/Madam,

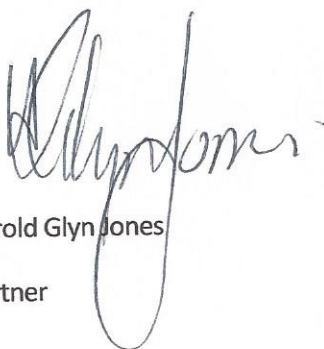
THE WATER RESOURCES (TRANSITIONAL PROVISIONS) REGULATIONS 2017

HG & E JONES

**APPLICATION FOR A NEW GROUNDWATER ABSTRACTION LICENCE FOR A BOREHOLE AT
NEW HOUSE FARM, LUDCHURCH, NARBERTH, PEMBROKESHIRE, UNDER THE
'TRANSITIONAL REGULATIONS'**

We hereby authorise Envireau Water of Cedars Farm Barn, Market Street, Draycott, Derbyshire, DE72 3NB to represent and sign on our behalf, forms relating to the submission of an application under the 'Transitional Regulations' for a new groundwater abstraction licence at New House Farm, Ludchurch, Narberth, Pembrokeshire.

Yours faithfully,

A handwritten signature in dark ink, appearing to read 'Harold Glyn Jones', with a large, stylized loop at the end.

Harold Glyn Jones

Partner



Fill in this form if you are applying for a transitional water resources licence to continue a previously exempt abstraction.

This form is available in both English and Welsh. Please check that this is the latest version of the form available from our website before submitting your application.

Please ensure you use Guidance Note WRH to help you.

All relevant guidance documents can be found on our website.

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1. Application type and fee

1.1 Please select your application type from the list below.

A new transitional water resources full abstraction licence for a previously exempt abstraction ☒

A new transitional water resources transfer licence for a previously exempt abstraction ☐

A variation to an existing full abstraction licence to add a previously exempt abstraction ☐

A variation to an existing transfer licence to add a previously exempt abstraction ☐

1.2 Please indicate the amount and how you wish to pay your application

Amount paid

Cheque ☐

Credit or debit card ☒

BACS transfer ☐ BACS reference number

2 Applicant and agent details

This is the individual or organisation any resulting licence will be issued to, and must be a legal entity. If you are an agent acting on behalf of an applicant, provide their details here and yours in section 2.2.

2.1 Applicant details

Individual ☐ Public body ☐

Registered company ☐ Organisation or group of individuals ☒

Other ☐ If 'Other', please specify

Title

First name	
Last name	
Company, charity, body, or trading name (if relevant)	HG & E Jones
Registered company or charity number (if relevant)	
Address	New House Farm
	Ludchurch
	Narberth
	Pembrokeshire
Postcode	SA67 8JD
Telephone - mobile	07901 557549
Telephone - office	01834 831346
Email address	glynnewhousefarm@gmail.com

We will contact you by email unless you tick here. ☐

2.2 Agent details

This is who we will correspond with unless otherwise informed. If you are an agent applying on behalf of an applicant, please include a letter of authorisation from the applicant allowing you to act as signatory, and provide a reference for this document in the box below.

Document reference	GJ Auth Let	
Title	Ms	
First name	Tamsin	
Last name	Morey	
Company or trading name	Envireau Water	
Position in company	Principal Water Resources Specialist	
Address	Envireau Water	
	Cedars Farm Barn, Market Street	

	Draycott
	Derbyshire
Postcode	DE72 3NB
Telephone - mobile	07976 168997
Telephone - office	01332 871882
Email address	tamsin@envireauwater.co.uk

We will contact you by email unless you tick here. ☐

2.3 Site operation contact

Please specify who we should contact with regard to your site operation.

Applicant	<input checked="" type="checkbox"/>	
Agent	<input type="checkbox"/>	
Other	<input type="checkbox"/>	Please provide contact details for the operational contact on a separate referenced document, and tell us this reference below.
Document reference	<input type="text"/>	

2.4 Abstraction invoices and records contact

Please specify who we should contact for invoices and abstraction records (returns). Please note that these may not be not required for transfer licences.

Invoice address

Applicant	<input checked="" type="checkbox"/>	
Agent	<input type="checkbox"/>	
Other	<input type="checkbox"/>	Please provide contact details for the operational contact on a separate referenced document, and tell us this reference below.
Document reference	<input type="text"/>	

Abstraction records

Applicant	<input checked="" type="checkbox"/>	
Agent	<input type="checkbox"/>	
Other	<input type="checkbox"/>	Please provide contact details for the operational contact on a separate referenced document, and tell us this reference below.
Document reference	<input type="text"/>	

3. Site name

3.1 Please provide the site name below:

Site name	New House Farm
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4. Entitlement to apply

4.1 Have you abstracted water between 01 January 2011 and 31 December 2017 for the activity which you are applying to be licensed?

Yes ☒

No ☐ Please see our water abstraction and impounding webpage for further information on the correct application forms.

4.2 What is your connection to the land where the abstraction takes place?

Please provide a map outlining your land ownership/occupation and include all abstractions and discharges where relevant.

Owner ☒

Occupier ☐

Document reference

Figure 1

4.3 Do you have a legal right of access to the land where the abstraction takes place?

No ☐

Yes ☒ Please provide further detail in the box below. If necessary continue on a separate referenced document, and tell us this reference.

Document reference

Figure 1

HG & E Jones is a partnership and has the right of access to the land at the Site as outlined in red on Figure 1 as the partners are owners of the land.

5. Existing licence number(s)

If you are applying to change an existing licence please provide the licence number below.

Licence number(s)

6. Cross border applications

As part of your site operation do you also abstract for a previously exempt activity in England?

No ☒

Yes ☐ Please provide detail of this cross border application in the box below. If possible, provide a reference or application number, or name of an Environment Agency contact with whom the application has been discussed.

Continue on a separate referenced sheet if necessary and tell us the reference for this document.

Document reference

--

7. Abstraction details

7.1 Site map

Please provide a map with details of the location(s) you abstract water from (points reaches, or areas). Tell us the reference for this map, below.

Site map reference

Figure 1

7.2 Please tell us details about the location(s) you abstract water from (points reaches, or areas) in the tables below.

The abstraction location, name, or reference must be the same as those used on the site map, in question 7.1. If you need more space, please continue on a separate referenced sheet if necessary and tell us the reference for this document

Document reference

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Table 7. 1 - Surface water abstractions						
Abstraction location name or reference (As labelled on the site map)	Type of location (single point, reach, area)	Source of Supply	First National Grid Reference (12 digits)	Second National Grid Reference (12 digits)	Third National Grid Reference (12 digits)	Fourth National Grid Reference (12 digits)

If necessary, continue on a separate sheet and tell us the reference for this document.

Document reference(s)

Table 7. 2 Ground water abstractions										
Abstraction location name or reference (as labelled on map)	Source of Supply	National Grid Reference (12 digit)	Overall depth (metres)	Maximum diameter (millimetres) or area of excavation (square metres)	Screened section (metres below ground level)	Drift geology	Solid geology	Rest pump water level	Pumped water level	Pump Depth
A	Borehole	SN 15874 11690	51mbgl	300mm	20 to 32 and 38 to 50mbgl	N/A	Lower Old Red Sandstone	5 mbgl	Unknown	Unknown

If necessary, continue on a separate sheet and tell us the reference for this document.

Document reference(s)

8. Abstraction history and evidence

8.1 Please complete table 8.1 to document that the abstraction(s) and transfer(s) has or have been taking place during the qualifying period.

If necessary, continue on a separate sheet and tell us the reference for this document.

Document reference(s)

GJ Historical Water Usage.xlsx

Table 8.1											
Year	Abstraction location name or reference (as labelled on map)	Purpose(s) water used for	Period of abstraction	Maximum quantities abstracted						Means of measurement, or assessment of abstracted quantities	Are these the maximum quantities of water you wish to have licensed? (Yes or No)
			All year, or months, or days (provide specific dates)	Year (cubic metres)	Day (cubic metres)	Hour (cubic metres)	Peak instantaneous flow rate (litres per second)	Maximum number of hours of abstraction per day	Please indicate whether volume is actual (A) or estimated (E)		
01 January 2011 to 31 December 2011	A	Parlour Washdown	All year	2,053	6	3	0.83	2	E	*See 'GJ Cont Sheet' for all	No
		Cattle Drinking	All year	4,334	12	*	*	*	E		No
		Domestic Water Supply	All year	329	0.9	*	*	*	E		No
		Fodder Beet Washing	Autumn/Winter	26	26	4.2	1.16	6.25	E		No
		Machinery Washing	All year	328	0.9	0.9	0.25	1	E		No
01 January 2012 to 31 December 2012	A	Parlour Washdown	All year	2,464	7	3.5	0.97	2	E		No
		Cattle Drinking	All year	5,201	14	*	*	*	E		No
		Domestic Water Supply	All year	329	0.9	*	*	*	E		No
		Fodder Beet Washing	Autumn/Winter	32	32	4.2	1.16	7.5	E		No
		Machinery Washing	All year	328	0.9	0.9	0.25	1	E		No
01 January 2013 to 31 December 2013	A	Parlour Washdown	All year	2,874	8	4	1.11	2	E		No
		Cattle Drinking	All year	6,068	17	*	*	*	E		No
		Domestic Water Supply	All year	329	0.9	*	*	*	E		No
		Fodder Beet Washing	Autumn/Winter	37	37	4.2	1.16	8.75	E		No
		Machinery Washing	All year	328	0.9	0.9	0.25	1	E		No
01 January 2014 to 31 December 2014	A	Parlour Washdown	All year	3,285	9	4.2	1.16	2	E		No
		Cattle Drinking	All year	6,935	19	*	*	*	E		No
		Domestic Water Supply	All year	383	1.05	*	*	*	E		No
		Fodder Beet Washing	Autumn/Winter	42	42	4.2	1.16	10	E		No
		Machinery Washing	All year	374	1.8	0.9	0.25	2	E		No
01 January 2015 to 31 December 2015	A	Parlour Washdown	All year	3,285	9	4.2	1.16	2	E		No
		Cattle Drinking	All year	6,935	19	*	*	*	E		No
		Domestic Water Supply	All year	383	1.05	*	*	*	E		No
		Fodder Beet Washing	Autumn/Winter	42	42	4.2	1.16	10	E		No
		Machinery Washing	All year	374	1.8	0.9	0.25	2	E		No
											No
01 January 2016 to 31 December 2016	A	Parlour Washdown	All year	3,285	9	4.2	1.16	2	E		
		Cattle Drinking	All year	6,935	19	*	*	*	E		No
		Domestic Water Supply	All year	383	1.05	*	*	*	E		No
		Fodder Beet Washing	Autumn/Winter	42	42	4.2	1.16	10	E		No
		Machinery Washing	All year	374	1.8	0.9	0.25	2	E		No
01 January 2017 to 31 December 2017	A	Parlour Washdown	All year	3,285	9	4.2	1.16	2	E		Yes
		Cattle Drinking	All year	6,935	19	*	*	*	E		Yes
		Domestic Water Supply	All year	383	1.05	*	*	*	E		Yes
		Fodder Beet Washing	Autumn/Winter	42	42	4.2	1.16	10	E		Yes
		Machinery Washing	All year	374	1.8	0.9	0.25	2	E		Yes

8.2 Please complete the table below if you wish a lesser quantity of water to be licensed than that detailed in table 8.1.

If necessary, continue on a separate sheet and provide a reference for this document.

Document reference

Table 8.2							
Abstraction location name or reference (as labelled on map)	Purpose water is used for	Abstraction period	Maximum annual abstraction volume (cubic metres)	Maximum daily abstraction volume (cubic metres)	Maximum hourly abstraction volume (cubic metres)	Maximum number of hours of abstraction per day	Peak abstraction rate (litres per second)

8.3 Do you wish your abstracted quantities to be aggregated?

You can aggregate:

- i) across some or all of the abstraction points, or reaches, or areas listed above.
- ii) with other abstractions you wish to have licensed through the transitional process.
- iii) abstractions you need to have licensed through the standard licensing process.
- iv) with existing licences you hold.

No ☒

Yes ☐ Provide details of any proposed aggregation in the box below. If necessary, continue on a separate sheet and provide a reference for this document.

Document reference

8.4 Please provide a detailed description of how the abstraction(s) has/have taken place

Use the box below to tell us about your abstraction(s). The description should include the following:

- A diagram or schematic of how the activity has been undertaken, using your abstraction point references and including any discharge points
- Details of the structure and equipment involved in the abstraction. This should include dimensions.
- Details of your means of measurement or assessment of abstraction quantities method

If necessary, continue on a separate sheet and tell us the reference for this document.

Document reference

See GJ Cont Sheet & Figure 2

8.5 Please list the evidence you are providing to support your application

Use the box below. The evidence should demonstrate the following:

- That abstraction has taken place at some time during the seven year qualifying period.
- The quantities of water you have abstracted during the qualifying period. For example, records of meter readings, or cropping plans.

If necessary, continue on a separate sheet and provide a reference for this document.

Document reference GJ Historical Water Usage.xlsx

Cattle numbers (max 200 milkers / 200 followers).

Average production / export of 1,200,000 litres of milk per year between 2014 and 2017.

All data registered with DEFRA.

9. Discharge details

9.1 Please provide details on any discharge of abstracted water in table 9.1 below and on the map used to show abstraction locations.

If necessary, continue a separate sheet and provide a reference for this document.

Document reference

Table 9.1 - Details of any discharge of abstracted water

Discharge location name or reference (as labelled on map)	National Grid Reference of discharge point (12 digit)	Total volume discharged (cubic metres)	Environmental Permit number for Water Discharge Activity number (if applicable)

9.2 Please provide a description of discharge structures and equipment

If necessary, continue a separate sheet and provide a reference for this document.

Document reference

10. Eel considerations

Does your abstraction include measures to safeguard eels?

No ☒

Yes ☐ Provide details below

11. Trickle Irrigation

If you are applying to licence a trickle irrigation abstraction, do you wish to apply for a Two-Part Tariff agreement with your application?

No ☐

Yes ☐ We will contact you during determination of your application to arrange this agreement.

12. Planned abstractions

12.1 Do you expect to increase the current rate of abstraction for the activity you are applying to have licensed from 01 January 2018 onwards or to carry out further new abstractions (both termed 'planned' abstractions) at this site in the future?

No ☐

Yes ☒

12.2 Have you submitted a licence application (s) for any planned abstraction(s) as a result of the Water Act 2003 changes?

No ☒

Yes ☐ Provide a reference number if you have already submitted an application(s) to cover any planned abstractions.

Document reference

GJ Cont Sheet

13. Other abstractions

Please provide details of any other abstraction(s) (licensed or exempt) that are associated with this application in table 13.1 below.

Table 13.1 - Details of any other abstraction(s) (licensed or exempt) that are associated with this application					
National Grid Reference (12 digit) of where you abstract water	Source name and type	Purpose of abstraction	Where do you use the water?	When do you abstract the water?	Is this a pending application, or already licensed? Please provide the application or licence number as appropriate

14. Planning permission

Complete table 14.1 below and provide details of any planning permissions or advice associated with the abstraction you are applying to have licensed where relevant. Provide a copy of any permissions or advice, providing a reference for this document below.

Document reference

Table 14.1 – Planning permission

Abstraction location name or reference (as labelled on map)	Is planning permission needed, Yes or No?	Planning permission status (if required)	Have you received any planning advice for the abstraction?

15. Environmental impact assessment(EIA)

Does your application require an EIA under The Water Resources (Environmental Impact Assessment) (England and Wales) Regulations 2003 (as amended)

No ☒

Yes ☐ Please provide a copy of your environmental impact assessment; provide a reference for this assessment below.

Document reference

16. Licence duration

Tell us when you wish your abstraction licence to end

Normally abstraction licences are granted for between 6 and 18 years in line with the catchment licence common end date. If you require a shorter or longer duration licence, please provide details and your justification in the box below.

If necessary, continue a separate sheet and provide a reference for this document.

Document reference

Proposed abstraction licence end date: 31/03/2030.

This is the common end date for the Carmarthen Bay CAMS as we understand is current policy for licensing under the Transitional Regulations.

17 Declaration and data protection and commercial confidentiality

Data protection:

Please read the guidance carefully for details on who can sign this section and note the information relating to the Data Protection Act 1998, our Public Register and exclusions.

Commercial confidentiality:

Do you think your application should be confidential, and that information should not be placed on the public register?

No ☒

Yes ☐ You must send us supporting information to tell us why. Use the box below or a separate sheet, and tell us the reference you have given this document.

Document reference

Declaration:

By signing below, you are declaring that as far as you know and believe the information given in this form, on any map and in any supporting or additional information is true.

A printed name in the 'signature' response box will be treated as the equivalent of an electronic signature.

Title

Ms

First name

Tamsin

Last name

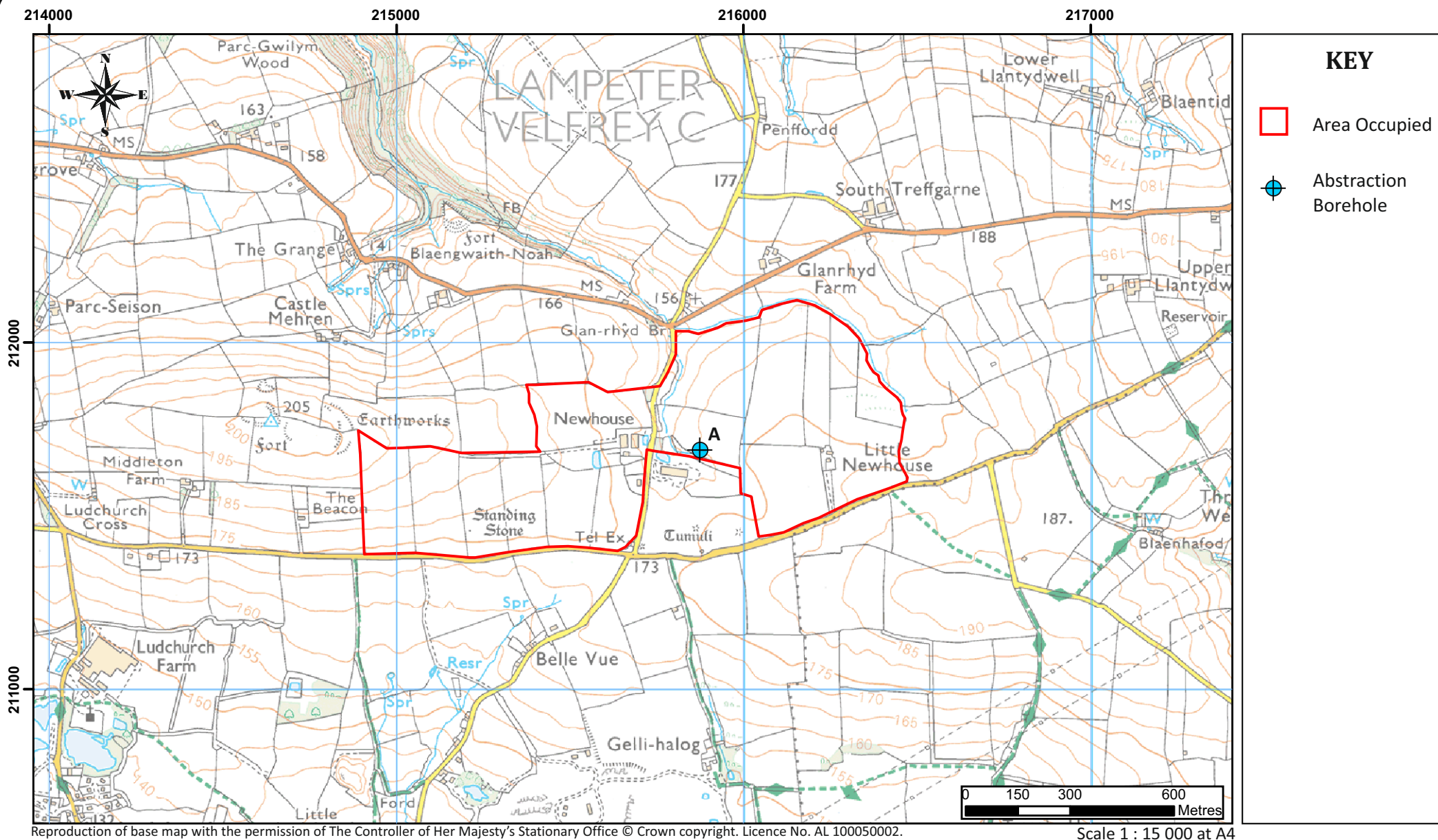
Morey

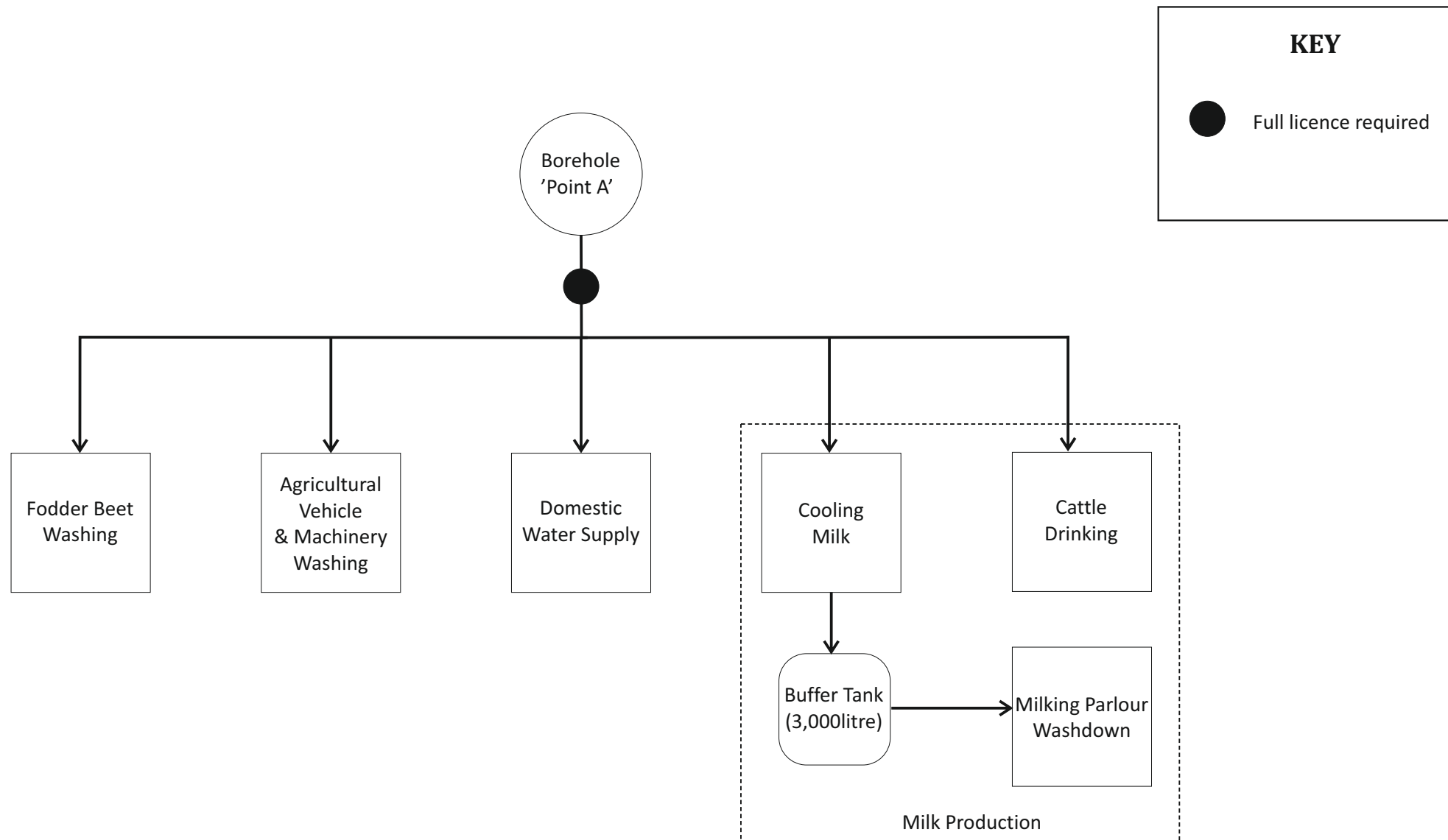
Position

Principal Water Resources Specialist

Today's date

22/07/2019





THE WATER RESOURCES (TRANSITIONAL PROVISIONS) REGULATIONS 2017

APPLICATION FOR A NEW GROUNDWATER ABSTRACTION LICENCE FROM A BOREHOLE AT NEW HOUSE FARM

Continuation Sheet

Overview/Background

HG & E Jones have been abstracting water at New House Farm, Ludchurch, Pembrokeshire since 2001/2002.

New House Farm covers approximately 155 acres and the business principally consists of dairy cattle grazing, housing and milking. Abstracted groundwater is used for all water needs at the site including stock drinking, milk cooling and washdown of cattle housing / milking parlour, washing of fodder beet, vehicle and machinery washdown, and domestic use for residents and full-time staff at the farm.

Abstraction takes place from a single borehole (Point A on Figure 1) and has previously been exempt from licencing through the groundwater geographically exempt areas exemption.

This application covers groundwater abstraction from 'New House Farm' point A.

Form WRH, Section 2.1 – Applicant Details

HG & E Jones is a partnership comprising Harold Glyn Jones and Eira Jones. Both reside at: New House Farm, Ludchurch, Narberth, Pembrokeshire, SA67 8JD.

Form WRH, Section 8.1 – Abstraction History & Evidence

Information has been entered in Table 8.1 where known. Maximum hourly rates for cattle drinking and domestic use are unknown but total abstraction is limited by the rate of the borehole pump (4.2m³/hr).

Form WRH, Section 8.4 – Please provide a detailed description of how the abstraction has taken place

Water distribution and storage

Water is abstracted from the borehole (point A) and used within the red line boundary on Figure 1 for milk production including cattle drinking, milk cooling and parlour washdown, washing of fodder beet, domestic water supply, and machinery washdown. A usage schematic is presented as Figure 2.

Water is used directly from the borehole with no intervening storage prior to initial use. The cooling water is used to fill a 3,000 litre buffer tank to feed the parlour washdown volume / pressure hoses. No discharge of abstracted water takes place.

Method and measurement of abstraction

The pump installed in the borehole (Point A) is a DAB S4C-13m and has a maximum capacity of 4.2m³/hour.

There is no flow meter installed on the borehole.

Assessment of water requirement

Historical usage volumes have been calculated from industry standard usage figures for milking cattle and domestic use and site estimated usage based on operational procedure.

The historical usage volumes are presented in 'GJ Historical Water Usage.xlsx' Excel workbook which accompanies this application.

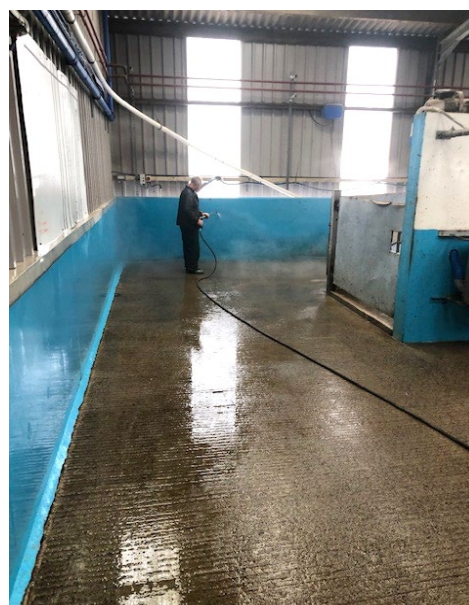
- Milk cooling

Water is routed from the borehole through the plate cooler and then into the washdown buffer tank to perform a dual function and maximise the efficiency of water use on the farm. All cooling water is reused for washdown and so usage has not been calculated separately.

- Cattle drinking and Parlour washdown

Standard usage figures from 'R&D Best Practice Manual W6-056/TR for industry and agriculture' have been used for milking cattle / followers drinking per head and parlour washdown using power hoses.

Washdown of the milking sheds takes place after each milking (2 x per day) using a volume hose (approximately 110 l/min) and then a pressure washer (Avant MAC ZP at 15 l/min).



Cleaning the milking machinery takes place by reverse flushing the system.

Water is sourced from the borehole via the cooling system and a washdown buffer tank.

- Vehicle washdown



On average eight agricultural vehicles are washed down per week (maximum 2 per day) using a mobile 4,000psi pressure washer (Hyundai HYW4000P) throughout the year. Flow rate and normal wash duration (1 hour per vehicle) have been used to estimate use.

- Domestic

New House Farm includes 1 domestic property (4 residents total) and has 3 full-time staff daily working at the farm, all year round. Domestic water volumes provided to the properties have been estimated based on the number of occupants and water flow rates as suggested in the British Water - Codes of Practice: Flows and Loads.

- Fodder Beet Washing

200 tonnes of fodder beet are organically grown on the farm annually and water is used for washing purposes via a Cross Gazelle Beet Washer. The quantity of fodder beet grown per year and the capacity of the washing machinery (designed to wash 20 tonnes of beet per hour using $4.56\text{m}^3/\text{hr}$ of water) have been used to estimate annual use. The machine is actually run at a slightly lower rate from the borehole (pump rate of $4.2\text{m}^3/\text{hr}$). The spec of the washing machinery is appended to this application.

Form WRH, Section 12 – Planned Abstractions

The business model intends the business to expand gradually between 2020 and 2023 to include a further 100 milking cattle (and followers) which will increase the water need at the site. An application will be submitted in due course.

Envireau Water
22/07/2019

FODDER BEET WASHING MACHINERY SPECIFICATION

- Beet equipment
- Slurry equipment
- Feeding equipment
- Tillage equipment
- Other equipment



“It’s the Obvious Choice”



Cross Beet Washing Machinery Range

With capacities from 20 tonnes per hour to 100 tonnes per hour

Cross Agricultural Engineering is the result of generations of metal working skills within the Cross family. This heritage has provided a solid foundation for the design and manufacture of quality farm machinery, with the constant help and co-operation with farmers and contractors.

Cross Agricultural Engineering Ltd.,
Newtown, Rathangan,
Co. Kildare, Ireland.

Tel : 00353 45 524134
Fax : 00353 45 524631
Email : info@crossagrieng.ie
Website: www.crossagrieng.ie



All Cross machines are manufactured in a purpose built facility, which utilises the latest in manufacturing technology. The company provides all of its own research and development work in-house. Following this new machines are tested rigorously to assess their reliability and

This literature is designed for worldwide circulation. Due to continuing policy of product improvement, we reserve the right to alter specifications and constructions without notice. As machines are exported to many different countries, general information, pictures and descriptions are provided; these should be taken as approximate and may include optional equipment that is not part of the standard specification. Please consult your local dealer/distributor for further information.

Thank you for considering the environmental impact of printing this brochure.



Cross Agricultural Machinery – It’s the Obvious Choice



Cross Beet Processing Machinery Range

With capacities from 20 tonnes per hour to 100 tonnes per hour



The Cross Beet Machinery range is built to the highest standards by a team of dedicated engineers using quality materials and manufactured in the latest high-tech manufacturing facilities. Our beet de-stoners and washers can deliver class leading levels of performance, quality and reliability to exceed the expectations of the most demanding users. You can be assured of a quality beet sample for sugar processing, for fermentation in biomass operations or animal feeding as part of a total mixed ration, when you choose a machine from the Cross beet processing range. Many machines in the Cross range can be seen in action on www.YouTube.com where their performance can be appreciated.

Cross Beet De-stoner and Washers

The Cross Washer and De-stoner range of beet processing machinery uses a combination of patented cleaning elements to ensure that you can deliver a quality clean and stone-free sample of beet for any application. The Cross Beet De-stoner and Washer range uses a unique water powered cyclone washing and cleaning system in combination with a tumbler cleaning cylinder to achieve consistent high quality beet for use in sugar processing, for the fermentation process used in biomass units and for feeding to livestock.

Each unit can be fitted with an optional hydraulic drive chopper unit at the end of the unloading conveyor. This attachment can be easily engaged, depending on changing farming needs.

All of the Cross Beet De-stoner and Washer machines have been developed in tough Irish conditions to remove stones of all shapes with the minimum use of water per tonne of beet washed and de-stoned. These quality machines have been proven to deliver quality and reliability on farms in Ireland, Germany and the UK.



Gazelle Beet Washer & Chopper

The Cross Gazelle Beet Washer was first designed for Armer Salmon who sold to all beet growers throughout Europe. It uses a combination of patented cleaning and chopping elements to ensure that you can deliver a quality clean sample of beet for any application. The Gazelle can be used for the dirtiest of beet crops to ensure clean and safe cattle feed. With an output of 20T/H the Gazelle Washer & Chopper is sure to provide a clean sample at a steady output rate.



Hippo Beet Washer & Chopper

The Cross Hippo Beet Washer was also first designed for Armer Salmon. The Hippo washer uses the same patented technology to ensure a clean sample is achieved. This machine has the option of washing whole or chopped beet with a hydraulic folding chopper. The Hippo has a pre-cleaning feature and therefore the water in the machine lasts longer. The front elevator will allow to feed into any diet feeder. With an output of 60 -80T/H the Hippo Washer & Chopper is sure to provide a clean



Rhino Beet Washer, De-Stoner & Chopper

The Cross Rhino Beet Washer was first designed for the biogas market and later spread into the sugar and fodder market. The Rhino contains a patented stone separation feature along with all the other features of the Hippo Previously mentioned. With an output of 60 - 80 T/H, this machine has the capabilities of the hippo with the added feature of stone separation.

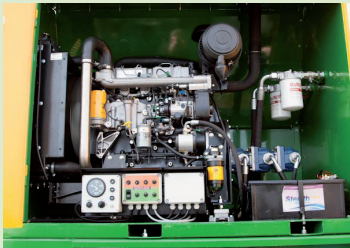


Elephant Beet Washer, De-Stoner & Chopper

The Cross Elephant Beet Washer was first designed to increase the output and the transportation time of the Rhino. The Elephant also contains a patented stone separation feature. This machine has its own on board engine and is transported with an articulated tractor unit. This means there is no need for any tractors to drive the machine. With an output of 80- 100 T/H, this machine has the capabilities of the Rhino with more output and less road transport time.

Cross Agricultural Engineering - Beet Washer - De-stoner Specifications

Model	Gazelle	Hippo	Rhino	Elephant
Output Washing	20 tonnes per hour	80 tonnes/hour	80 tonnes/hour	100 tonnes/hour
Output Washing & Chopping	20 tonnes per hour	60 tonnes/hour	60 tonnes/hour	80 tonnes/hour
Water Requirement Litres (Gallons)	4,560 Litres (1000 Gals.)	10,488 Litres (2300 Gals.)	14,592 Litres (3200 Gals.)	14,592 Litres (3200 Gals.)
Power Requirement	35hp	120hp	120hp	Own Engine
Engine Drive	Not Available	Optional	Optional	Standard
Hopper Capacity	1,000kg	3,000kg	3,000kg	3,000kg
De-stoner	Not available	Not available	Standard	Standard
Chopper Optional or Standard	Optional	Optional	Optional	Optional
Overall Working Length	5.41 metres	13 metres	14.6 metres	16 metres
Overall Width	1.95 metres	2.6 metres	2.6 metres	2.6 metres
Unladen Weight	1,750kg	9,760kg	13,500kg	17,500kg
Transport Length	4.75 metres	10.95 metres	13.1 metres	13.9 metres



Other Beet Processing Machinery

Cross Agricultural Engineering also do a range of other beet processing machinery for all purposes. The range includes; Cleaner Loaders, Stationary Beet Choppers and Cross (Armer Salmon) Beet Harvesters. All of these machines can be seen on the Cross website or you can ask one of the Cross representatives for a brochure detailing these machines.

