PANTMOCH FARM

PONTSIAN LLANDUSUL

SA44 4UN

Supporting Documentation

Ground Water Transitional Licence Application

Natural Resources Wales

Supporting Documents for Pantmoch Farm

Ground Water Transitional Licence Application

Business Trading Name – Pantmoch Limited

Business Address – Pantmoch, Pontsian, Llandusul, Ceredigion, SA44 4UN

Category - Technical Supporting Information

Date – 30 October 2019

Content:

Information

Brief history of farm eg type livestock only or mixed with arable crops

Pantmoch is a modern dairy unit that is located on the outskirts of the hamlet of Pontsian, Ceredigion. The principal contact are Mr Robert Davies and Mrs Franccs Davies who are the third generation of the Davies family to farm at Pantmoch.

The dairy farm is an all grass unit and consists of owned and rented land. The land bank is down to grass leys and silage cropping with concentrates fed to the cows to supplement the feed ration. The dairy herd is on a pasture system during the summer months. Under this type of system milk production is predominately from grass with Friesian and Holstein Cross cows producing an annual average 6000- 9000lts per cow and would be classed as a high performing herd.

Average stocking at the farm amounts to 300 dairy cattle all kept on cubicles with further 110 animals between 13-24 months and 90 animals between 3-13months. The dairy herd is on a pasture system during the summer months. Under this type of system milk production is predominately from grass with Friesian/Holstein cows producing between 6000-9000lts per cow.

As shown on the stocking density in 2015 there was a reduction in animal numbers this was due to an outbreak of tuberculosis (TB) within the herd and also a phosphorus deficiency. Stocking numbers have now recovered in 2018 with over 305 cows going through the milking parlour.

Water Supply

The farm is solely dependent on the private water supply that is sourced from two groundwater abstractions, theses are located within the farm stead. Groundwater is pumped to three storage tanks to the plate cooler and then distributed via the farm mains supply to the milking parlour and stock sheds. DWR Cymru Welsh Water does not have a public water supply to the farm and therefore, the private supply is essential for the viability of the business and dwelling that depend on this natural resource.

Natural Water Resource

A growing number of livestock farmers are seeking to source water from alternative sources such as boreholes, springs, rivers, lakes or rainwater harvesting as costs of mains water increases.

Stock farm water is one of the most important natural resources, whether considering direct water consumption being stock drinking, washing and cleaning. Approximately a third to a half of all potable water abstractions are used for drinking with the remaining being used for cleaning parlours, yards and milk cooling.

From the 1 April 2005, an amendment was made to the Water Act 2003 that deregulated abstractions of **less** than $20m^3$/day the law now permits you to abstract up to a maximum of $20m^3$/day (equal to 20,000 litres per day) without the need for a licence. This is subject to conditions:

(1) You have a legal right to the source of supply if it is on your land.

(2) The abstraction is not part of a series of abstractions from the same source totalling a quantity greater than $20m^3$/day.

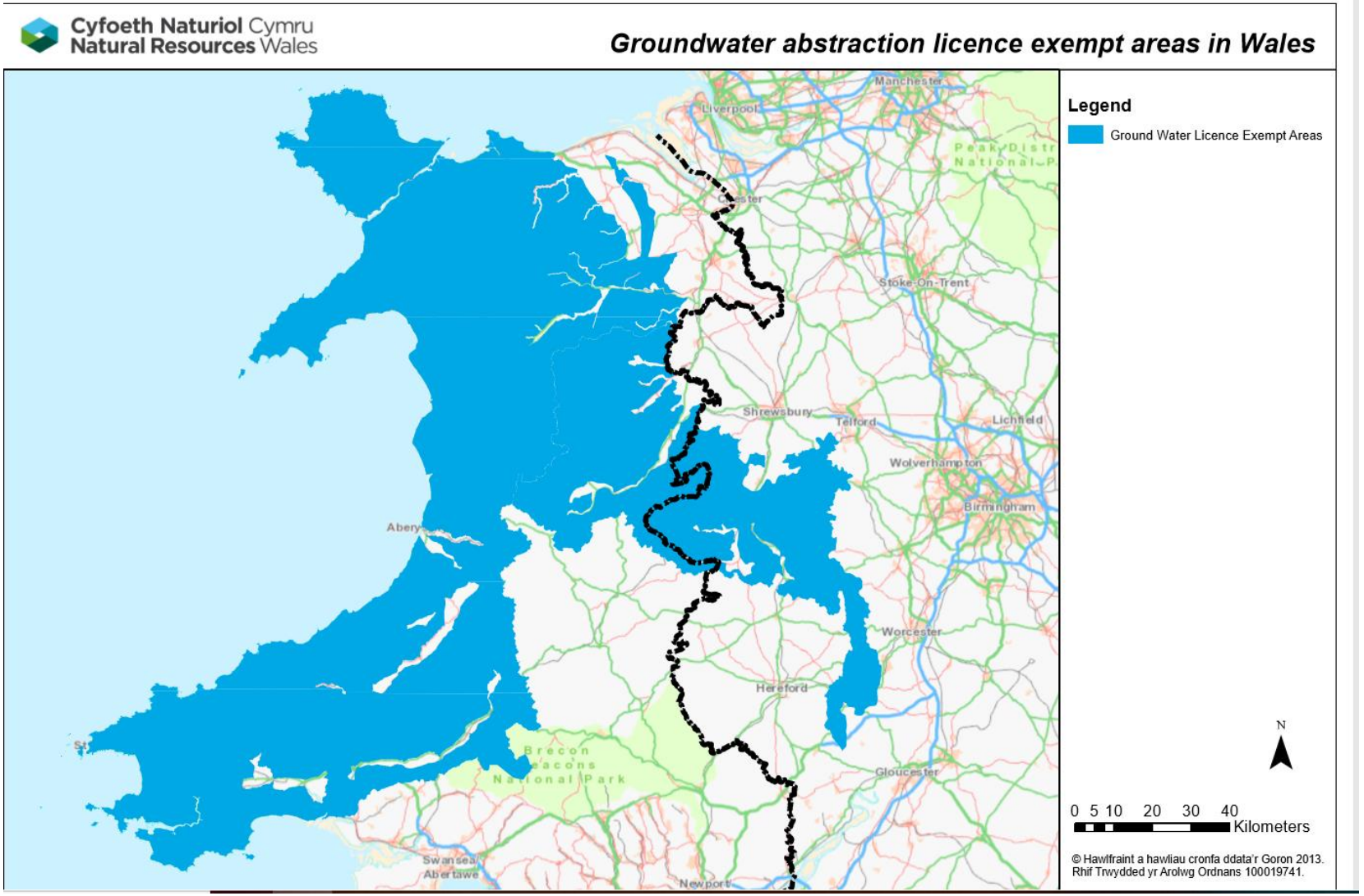
Natural Resources Wales have introduced an application window where a transitional licence application is required to be submitted during this period 1 January 2018 until 31 December 2019. Following this, there is up to a 3-year determination period. The application fee is currently £135. Transitional licence applications are required to be submitted during the application window 1 January 2018 until 31 December 2019 if you abstract more the exempt limit.

After the 31 December 2019 if more than $20m^3$/day a full licence application will have to be submitted to continue using the groundwater abstraction.

If a farm has several boreholes which one of them may be a domestic supply which all abstract from the same source of supply, i.e. the same groundwater source that in total abstract more than $20m^3$/day will require a licence.

Areas within Wales that are outside the Groundwater exempt area should all have an abstraction licence if they abstracted more than the exempt limit.

Map showing Exempt Groundwater Area Wales



Doc1 Letter of Authorisation

Becky@kebek.co.uk
07901339662

11th October 2019

Frances Davies
Pantmoch Farm Ltd
Pantmoch Farm
Pontsian
Llandysul

SA44 4UN

Letter of Authorisation: Kebek Ltd

This is to certify that I, Frances Davies authorise our representatives of Kebek Ltd, to act on our behalf with regard to the application for the Transitional Licence for existing groundwater abstraction at Pantmoch Farm.

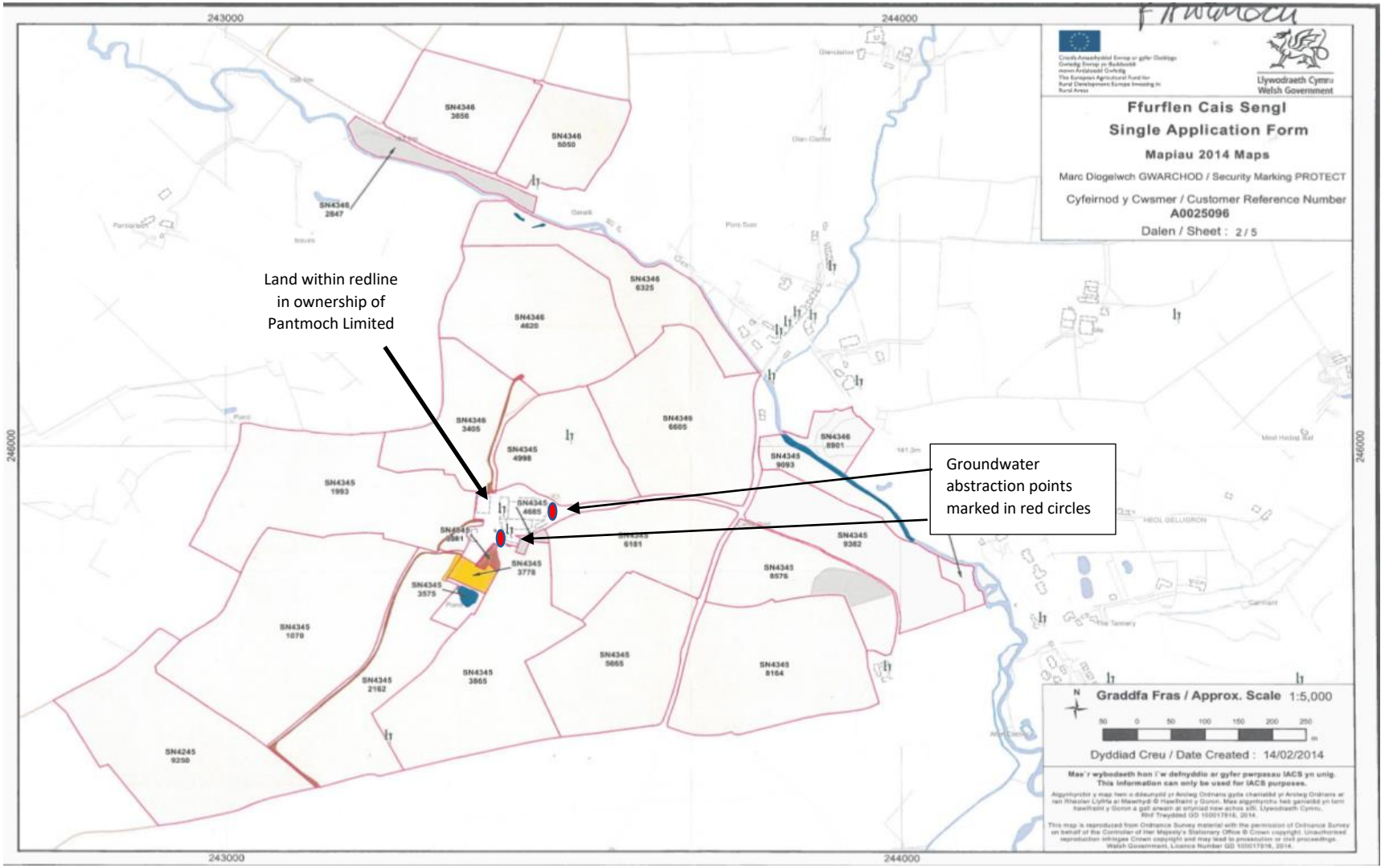
Name: Kebek Ltd
Company representative: Rebecca Jones and Keith Owen
Date: 11th October 2019
Contact details:
Becky@kebek.co.uk 07901339662
Keith@kebek.co.uk 07522780346

Yours sincerely

Frances Davies
Director

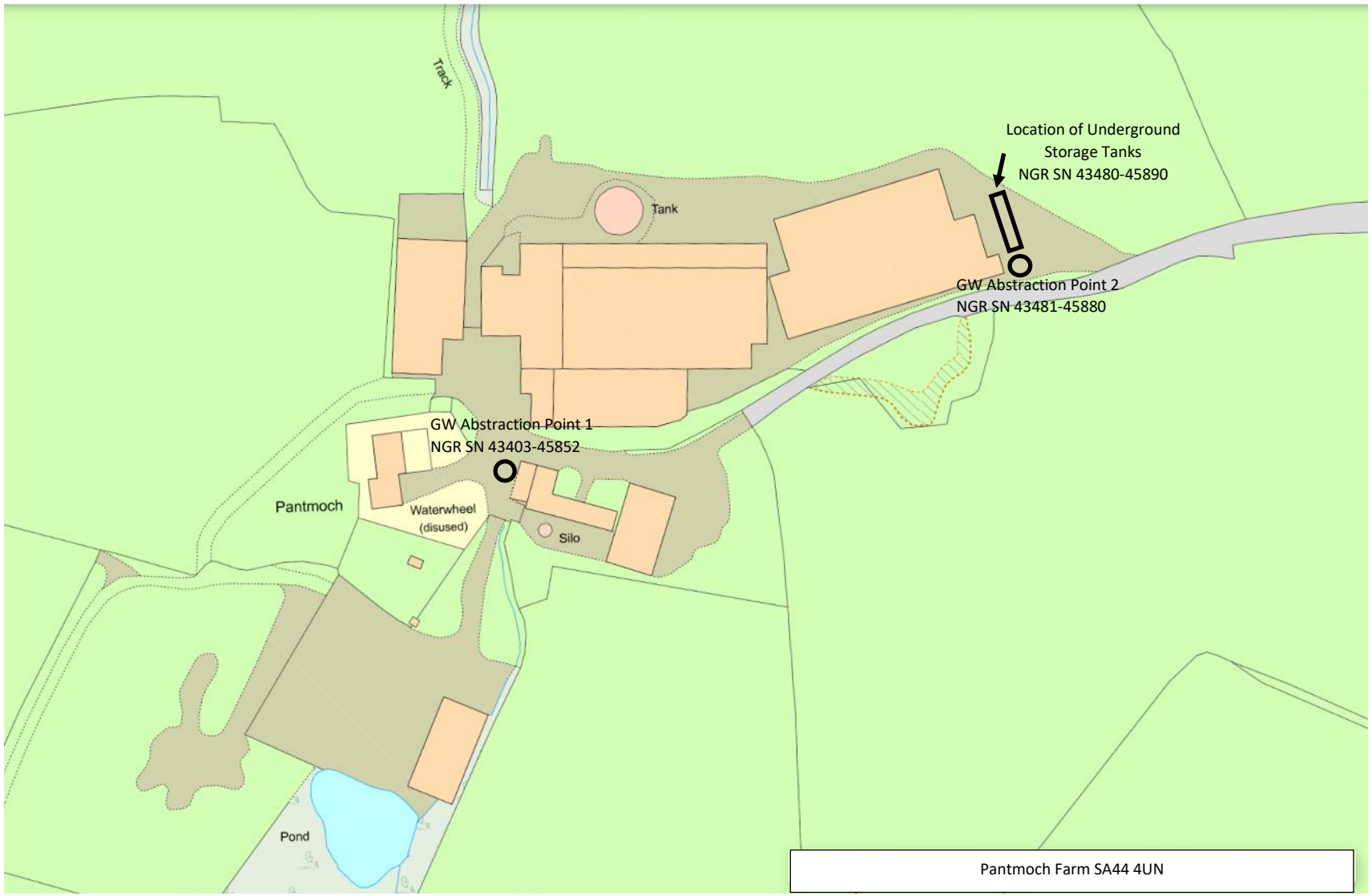
Pantmoch Farm Ltd

Doc 2 – Entitlement to Land SFP (Welsh Assembly Government) Maps



Doc3 Pantmoch Farm Location Map

Doc 4 Pantmoch Farm - Groundwater Borehole Locations



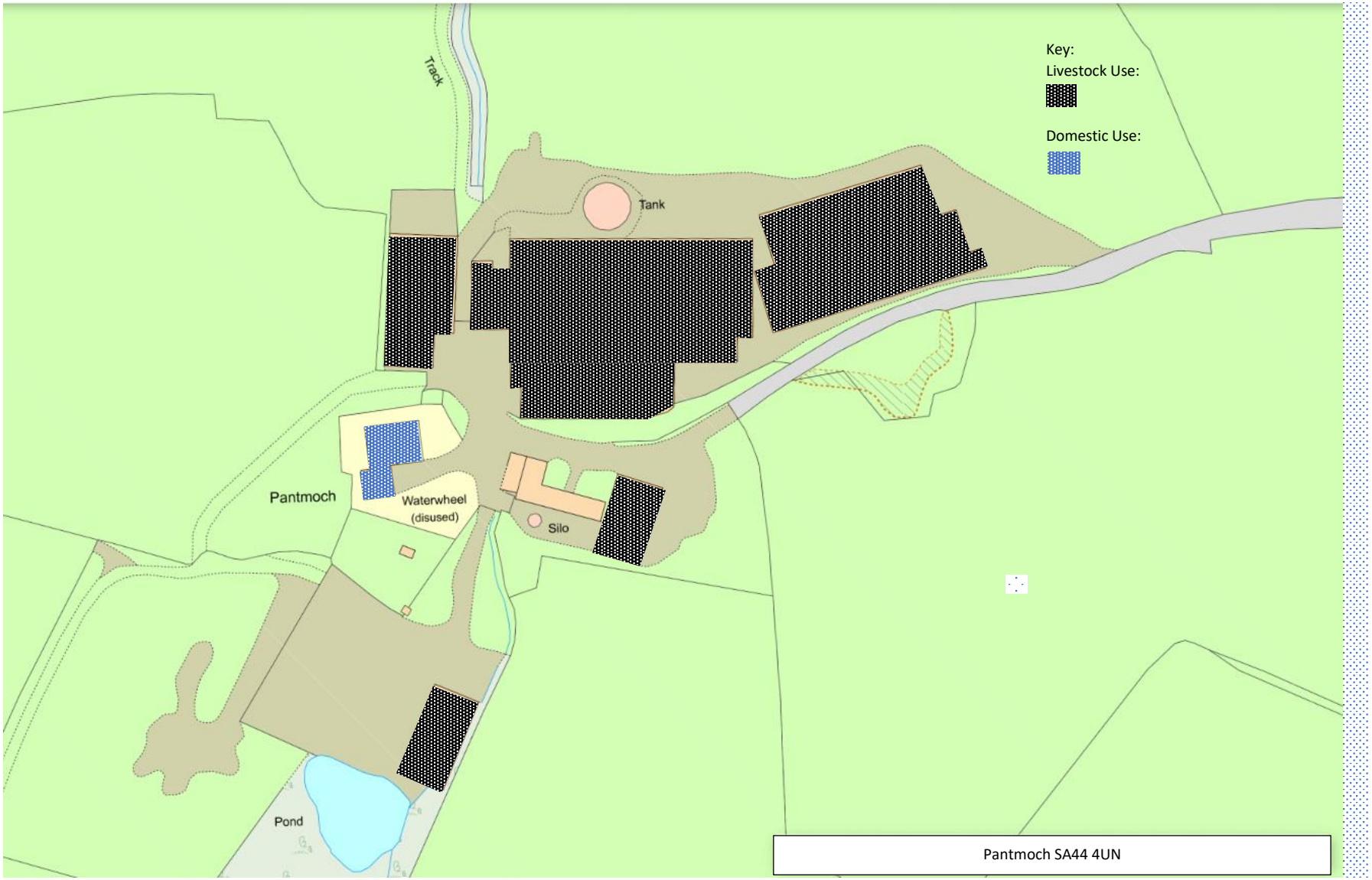
Doc5 - Photographic Evidence Borehole Chambers

GW Abstraction point 1

Doc5 - Photographic Evidence Borehole Chambers

GW Abstraction Point2

Doc6 Pantmoch Farm: Borehole Distribution Plan



Doc6 Groundwater Pump Specifications/Pressure vessel label

Doc6 Groundwater Pump Specifications DAB S4C-19

S4

SAND RESISTANT

CE

(Control box only for single-phase version)

GENERAL DATA

Applications

Submerged electric pump for 4" wells or larger, capable of generating a broad range of flow rates and heads. These units have a very extensive range of applications for lifting, distribution and pressurisation in civil and industrial water systems, filling of pressure vessels and tanks, fire-fighting and washing installations, and irrigation systems.

Pump construction features

Multistage centrifugal type with radial or semiaxial impellers. Directly coupled pump and motor with rigid coupling. Technopolymer impellers with stainless steel wear parts, functioning on floating clearance rings made of synthetic low abrasion material with technopolymer diffusers that impart significant wear resistance to the pump. Pump liner, shaft and coupling, filter and cable cover in stainless steel.
Base support and head in microcast AISI 304 stainless steel with steel check valve incorporated in head. The pumps comply with European Council Directives.

Motor construction characteristics

Submerged asynchronous two-pole motor made of AISI 304 stainless steel. For the parts in contact with the water. Squirrel cage rotor mounted on self-centring thrust block designed to withstand significant axial loads. Cooling of the thrust bearing and the bushings is provided by water, thereby eliminating the risk of oil contamination. Canned-type stator in an airtight casing made of stainless steel AISI 304L.

Flanging to NEMA – 4"
Protection rating: IP68
Heat insulation class: F
Input voltage: single phase 220-230 V / 50Hz
three-phase 400 V / 50Hz

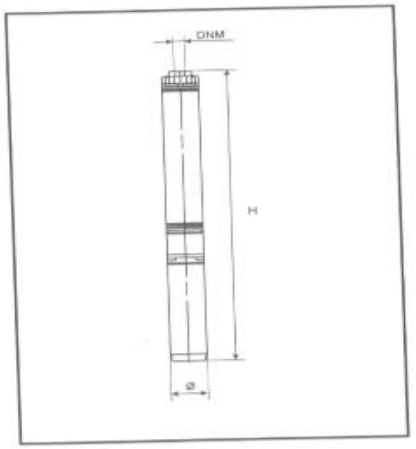
Supply

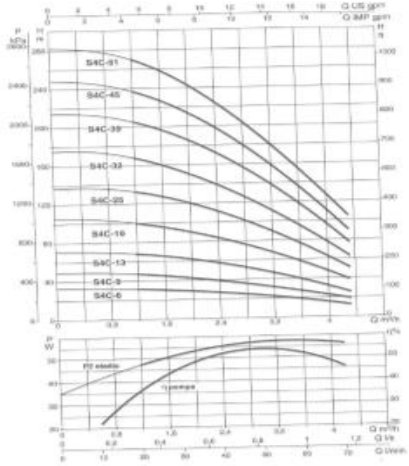
Control box (for single phase version) and motor must be ordered separately.

The performance curves are based on kinematic viscosity values = 1 mm²/s and density equivalent to 1000 kg/m³. Tolerance of curves to ISO 9906.

S4C

Liquid temperature range: from 0°C to +40°C





MODEL	Ø (mm)	HEIGHT H M single-phase	HEIGHT H T three-phase	DNM	PACK DIMENSIONS (mm) L/A	L/B	H	VOLUME m³	GROSS WEIGHT Kg M single-phase	GROSS WEIGHT Kg T three-phase
S4C-6 M / S4C-6 T	97	614	593	1" 1/4 G	110	110	770	0,010	12,6	11,5
S4C-9 M / S4C-9 T	97	741	711	1" 1/4 G	110	110	910	0,011	14,6	13,2
S4C-13 M / S4C-13 T	97	891	871	1" 1/4 G	110	110	1080	0,013	15,5	15,4
S4C-19 M / S4C-19 T	97	1160	1086	1" 1/4 G	120	120	1240	0,018	18,5	17,8
S4C-25 M / S4C-25 T	97	1416	1343	1" 1/4 G	120	120	1590	0,023	25,2	20,5
S4C-32 M / S4C-32 T	97	1668	1648	1" 1/4 G	120	120	1920	0,025	28,2	23,7
S4C-39 M / S4C-39 T	97	1896	1875	1" 1/4 G	120	120	2200	0,032	29,8	25,3
S4C-45 T	97	–	2337	1" 1/4 G	120	120	2600	0,038	–	34
S4C-51 T	97	–	2532	1" 1/4 G	120	120	2600	0,038	–	32,6

MODEL	ELECTRICAL DATA POWER SUPPLY 50 Hz	P2 NOMINAL kW	P2 NOMINAL HP	HYDRAULIC DATA (n = 2850 1/min) Q m³/h	Q l/min	H (m)							
				0	0	1,2	1,5	1,8	2,1	2,4	3	3,6	4,2
					0	20	25	30	35	40	50	60	70
S4C-6 M	1x230 V –	0,37	0,5		33	31,8	30,7	29,4	27,5	26,4	22,7	18,5	13,2
S4C-6 T	3x400 V –*	0,37	0,5		33	31,8	30,7	29,4	27,5	26,4	22,7	18,5	13,2
S4C-9 M	1x230 V –	0,55	0,75		49,5	47,7	46	44	41,5	39,6	34	27,7	19,8
S4C-9 T	3x400 V –*	0,55	0,75		49,5	47,7	46	44	41,5	39,6	34	27,7	19,8
S4C-13 M	1x230 V –	0,75	1		71,5	68,9	66,4	63,7	60,5	57,2	49,2	40	28,6
S4C-13 T	3x400 V –*	0,75	1		71,5	68,9	66,4	63,7	60,5	57,2	49,2	40	28,6
S4C-19 M	1x230 V –	1,1	1,5		104,5	100,7	97	93	87,8	83,6	71,8	58,5	41,8
S4C-19 T	3x400 V –*	1,1	1,5		104,5	100,7	97	93	87,8	83,6	71,8	58,5	41,8
S4C-25 M	1x230 V –	1,5	2		137,5	132,5	128	122,5	116	110	94,5	77	55
S4C-25 T	3x400 V –*	1,5	2		137,5	132,5	128	122,5	116	110	94,5	77	55
S4C-32 M	1x230 V –	2,2	3		176	169,6	163	156,8	149	140,8	120,9	98,6	70,4
S4C-32 T	3x400 V –*	2,2	3		176	169,6	163	156,8	149	140,8	120,9	98,6	70,4
S4C-39 M	1x230 V –	2,2	3		214,5	206,7	200	191,1	181,5	171,6	147,4	120,1	85,8
S4C-39 T	3x400 V –*	2,2	3		214,5	206,7	200	191,1	181,5	171,6	147,4	120,1	85,8
S4C-45 T	3x400 V –*	3	4		247,5	238,5	229	220,5	210	198	170,1	138,6	99
S4C-51 T	3x400 V –*	3	4		280,5	270,3	261	250	237	224,4	192,8	157,1	112,2

* 3x230 V – available on request.

Doc8 Livestock numbers and water volume used 2011-2017 GW1

2011	water consur	livestock no	daily consum	monthly con	annual consu	flow rate litre per hour	flow rate litres per second	pump time for drinking water (seconds)	pump time for drinking water (hours)	pump time for parlour washings (seconds)	pump time for parlour washings (hours)
dairy cows in milk	100		0	0	0	3000	0.8	6019.2	1.7	0	0.0
cow with calf	50		0	0	0						
heifers 24 month	50	96	4800	144000	1728000						
<12 month	36	6	216	6480	77760						
Bull	100		0	0	0						
total livestock water use			5016	150480	1805760						
parlour washings	20		0	0	0						

2012	water consur	livestock no	daily consum	monthly con	annual consu	flow rate litre per hour	flow rate litres per second	pump time for drinking water (seconds)	pump time for drinking water (hours)	pump time for parlour washings (seconds)	pump time for parlour washings (hours)
dairy cows in milk	100		0	0	0	3000	0.8	8352	2.3	0	0.0
cow with calf	50		0	0	0						
heifers 24 month	50	60	3000	90000	1080000						
<12 month	36	110	3960	118800	1425600						
Bull	100		0	0	0						
total livestock water use			6960	208800	2505600						
parlour washings	20		0	0	0						

2013	water consur	livestock no	daily consum	monthly con	annual consu	flow rate litre per hour	flow rate litres per second	pump time for drinking water (seconds)	pump time for drinking water (hours)	pump time for parlour washings (seconds)	pump time for parlour washings (hours)
dairy cows in milk	100		0	0	0	3000	0.8	5052	1.4	0	0.0
cow with calf	50		0	0	0						
heifers 24 month	50	5	250	7500	90000						
<12 month	36	110	3960	118800	1425600						
Bull	100		0	0	0						
total livestock water use			4210	126300	1515600						
parlour washings	20		0	0	0						

2014	water consur	livestock no	daily consum	monthly con	annual consu	flow rate litre per hour	flow rate litres per second	pump time for drinking water (seconds)	pump time for drinking water (hours)	pump time for parlour washings (seconds)	pump time for parlour washings (hours)
dairy cows in milk	100		0	0	0	3000	0.8	5947.2	1.7	0	0.0
cow with calf	50		0	0	0						
heifers 24 month	50	12	600	18000	216000						
<12 month	36	121	4356	130680	1568160						
Bull	100		0	0	0						
total livestock water use			4956	148680	1784160						
parlour washings	20		0	0	0						

2015	water consur	livestock no	daily consum	monthly con	annual consu	flow rate litre per hour	flow rate litres per second	pump time for drinking water (seconds)	pump time for drinking water (hours)	pump time for parlour washings (seconds)	pump time for parlour washings (hours)
dairy cows in milk	100		0	0	0	3000	0.8	5227.2	1.5	0	0.0
cow with calf	50		0	0	0						
heifers 24 month	50	0	0	0	0						
<12 month	36	121	4356	130680	1568160						
Bull	100		0	0	0						
total livestock water use			4356	130680	1568160						
parlour washings	20		0	0	0						

2016	water consur	livestock no	daily consum	monthly con	annual consu	flow rate litre per hour	flow rate litres per second	pump time for drinking water (seconds)	pump time for drinking water (hours)	pump time for parlour washings (seconds)	pump time for parlour washings (hours)
dairy cows in milk	100		0	0	0	3000	0.8	4449.6	1.2	0	0.0
cow with calf	50		0	0	0						
heifers 24 month	50	0	0	0	0						
<12 month	36	103	3708	111240	1334880						
Bull	100		0	0	0						
total livestock water use			3708	111240	1334880						
parlour washings	20		0	0	0						

2017	water consur	livestock no	daily consum	monthly con	annual consu	flow rate litre per hour	flow rate litres per second	pump time for drinking water (seconds)	pump time for drinking water (hours)	pump time for parlour washings (seconds)	pump time for parlour washings (hours)
dairy cows in milk	100		0	0	0	3000	0.8	4104	1.1	0	0.0
cow with calf	50		0	0	0						
heifers 24 month	50	0	0	0	0						
<12 month	36	95	3420	102600	1231200						
Bull	100		0	0	0						
total livestock water use			3420	102600	1231200						
parlour washings	20		0	0	0						

Doc8 Livestock numbers and water volume used 2011-2017 GW2

2011	water consur	livestock no	daily consum	monthly con	annual consu	flow rate litre per hour	flow rate litres per second	pump time for drinking water (seconds)	pump time for drinking water (hours)	pump time for parlour washings (seconds)	pump time for parlour washings (hours)
dairy cows in milk	100	154	15400	462000	5544000	3000	0.8	22320.0	6.2	3696	1.0
cow with calf	50	60	3000	90000	1080000						
heifers 24 month	50		0	0	0						
<12 month	36		0	0	0						
Bull	100	2	200	6000	72000						
total livestock water use			18600	558000	6696000						
parlour washings	20	154	3080	92400	1108800						

2012	water consur	livestock no	daily consum	monthly con	annual consu	flow rate litre per hour	flow rate litres per second	pump time for drinking water (seconds)	pump time for drinking water (hours)	pump time for parlour washings (seconds)	pump time for parlour washings (hours)
dairy cows in milk	100	292	29200	876000	10512000	3000	0.8	38460	10.7	7008	1.9
cow with calf	50	47	2350	70500	846000						
heifers 24 month	50		0	0	0						
<12 month	36		0	0	0						
Bull	100	5	500	15000	180000						
total livestock water use			32050	961500	11538000						
parlour washings	20	292	5840	175200	2102400						

2013	water consur	livestock no	daily consum	monthly con	annual consu	flow rate litre per hour	flow rate litres per second	pump time for drinking water (seconds)	pump time for drinking water (hours)	pump time for parlour washings (seconds)	pump time for parlour washings (hours)
dairy cows in milk	100	287	28700	861000	10332000	3000	0.8	40920	11.4	6888	1.9
cow with calf	50	90	4500	135000	1620000						
heifers 24 month	50		0	0	0						
<12 month	36		0	0	0						
Bull	100	9	900	27000	324000						
total livestock water use			34100	1023000	12276000						
parlour washings	20	287	5740	172200	2066400						

2014	water consur	livestock no	daily consum	monthly con	annual consu	flow rate litre per hour	flow rate litres per second	pump time for drinking water (seconds)	pump time for drinking water (hours)	pump time for parlour washings (seconds)	pump time for parlour washings (hours)
dairy cows in milk	100	297	29700	891000	10692000	3000	0.8	42000	11.7	7128	2.0
cow with calf	50	96	4800	144000	1728000						
heifers 24 month	50		0	0	0						
<12 month	36		0	0	0						
Bull	100	5	500	15000	180000						
total livestock water use			35000	1050000	12600000						
parlour washings	20	297	5940	178200	2138400						

2015	water consur	livestock no	daily consum	monthly con	annual consu	flow rate litre per hour	flow rate litres per second	pump time for drinking water (seconds)	pump time for drinking water (hours)	pump time for parlour washings (seconds)	pump time for parlour washings (hours)
dairy cows in milk	100	280	28000	840000	10080000	3000	0.8	41580	11.6	6720	1.9
cow with calf	50	119	5950	178500	2142000						
heifers 24 month	50	0	0	0	0						
<12 month	36	0	0	0	0						
Bull	100	7	700	21000	252000						
total livestock water use			34650	1039500	12474000						
parlour washings	20	280	5600	168000	2016000						

2016	water consur	livestock no	daily consum	monthly con	annual consu	flow rate litre per hour	flow rate litres per second	pump time for drinking water (seconds)	pump time for drinking water (hours)	pump time for parlour washings (seconds)	pump time for parlour washings (hours)
dairy cows in milk	100	306	30600	918000	11016000	3000	0.8	43620	12.1	7344	2.0
cow with calf	50	99	4950	148500	1782000						
heifers 24 month	50	0	0	0	0						
<12 month	36	0	0	0	0						
Bull	100	8	800	24000	288000						
total livestock water use			36350	1090500	13086000						
parlour washings	20	306	6120	183600	2203200						

2017	water consur	livestock no	daily consum	monthly con	annual consu	flow rate litre per hour	flow rate litres per second	pump time for drinking water (seconds)	pump time for drinking water (hours)	pump time for parlour washings (seconds)	pump time for parlour washings (hours)
dairy cows in milk	100	305	30500	915000	10980000	3000	0.8	43440	12.1	7320	2.0
cow with calf	50	96	4800	144000	1728000						
heifers 24 month	50	0	0	0	0						
<12 month	36	0	0	0	0						
Bull	100	9	900	27000	324000						
total livestock water use			36200	1086000	13032000						
parlour washings	20	305	6100	183000	2196000						

Doc8 please see attached Excel Spreadsheets that have been extracted from Rural Payments Agency livestock numbers for Pantmoch Farm Ltd