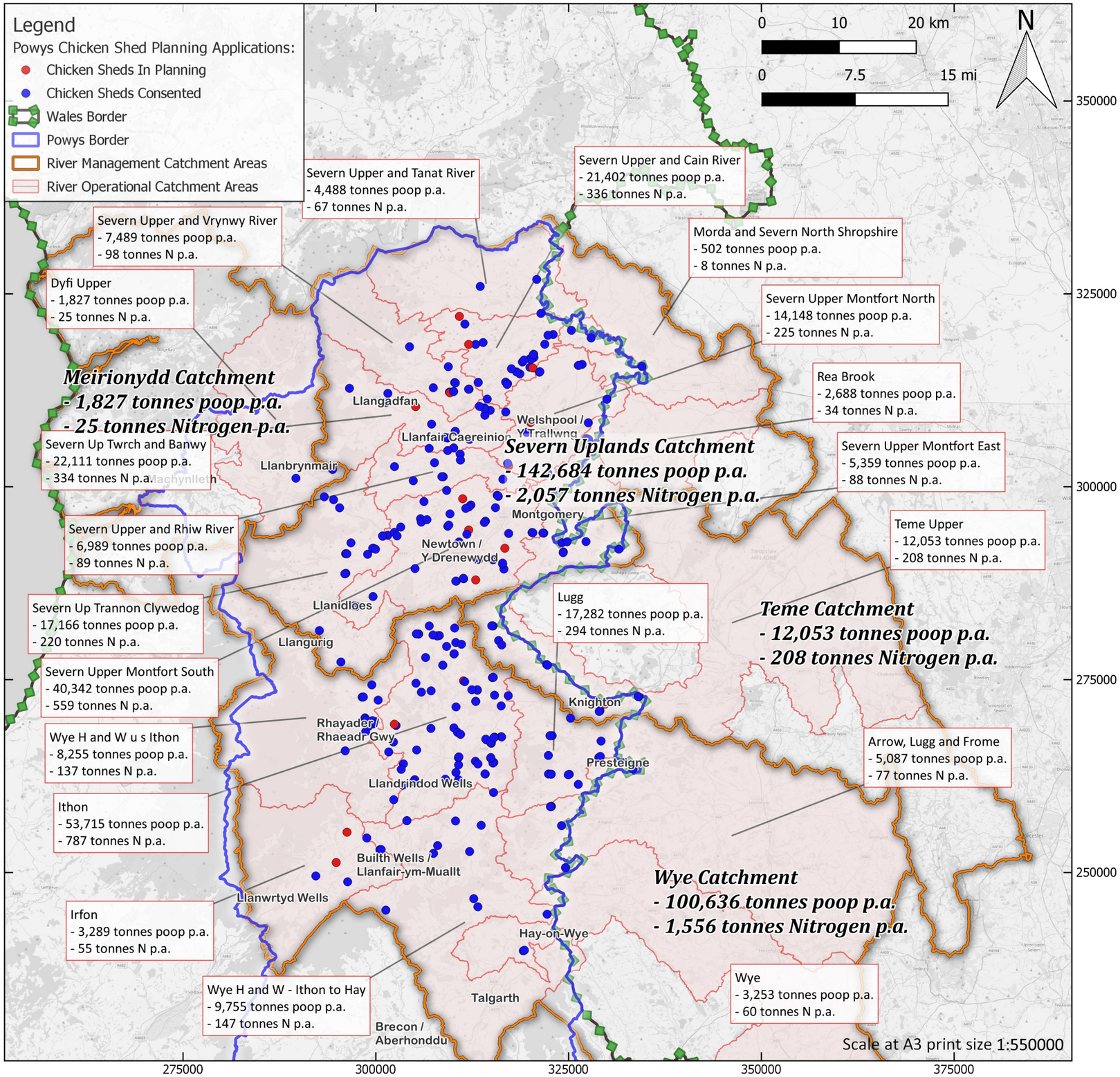
Powys River Catchment Areas:
Chicken Sheds with Poop and Nitrogen Production by Catchment



NOTES

Calculation Basis:
This map presents the Farm sites of planning applications (with data as at August 2020) for Intensive Poultry Units (IPUs) in Powys. The sheds are producing variously eggs, fertile eggs, broilers and pullets. In summary: there are over 200 Intensive Poultry Unit (IPU) farms here in Powys with over 340 sheds and capacity for almost 10 million chickens. Both Approved and In Planning Applications have been included in the calculations: there are 18 Approved applications in the dataset for which we have no bird total so their poop and Nitrogen (N) production can't be calculated; it includes calculations for applications In Planning (coincidentally 18 applications); it also may include some Approved applications that are not yet in operation; it is possible also that the calculations may include some applications where the farmer may have ceased intensive chicken rearing but that we are not aware of. However, given the above constraints we believe that the totals are extremely representative of the true picture of poop and Nitrogen production by intensively reared chickens in the river catchments of Powys. (Note: As at 28/9/2020 three of the above-mentioned 18 applications have just been approved - just over 200,000 chickens.)

Scope:
The River Management Catchments shown are only those that contain Powys IPUs. Similarly the smaller Operational Catchments shown are only those that house Powys IPUs. It should also be noted that none of the English IPUs in any of the river catchments that cross the border with England are shown on the map, so the poop and Nitrogen production for those catchments as a whole will be greater than that shown here.

Manure and digestate spreading and the difficulty accounting for export/import:
Currently, applications include a manure management plan for chicken manure (i.e. poop + bedding) spreading at a rate of 250kg Nitrogen/Hectare/year, taking into account manure from other livestock on farm, and other best-practice constraints. Excess manure is exported either to other farms or to Anaerobic Digesters (ADs). Digestate (the product of ADs) is also spread on nearby farm land. This means that most, but not necessarily all, manure from an Intensive Poultry Unit is spread in the catchment area in which it is produced.

Phosphate acumulation in soil over years:
High phosphates (a component of chicken poop, and at around 3/4 of the weight of the Nitrogen produced) pollute rivers, killing freshwater species; therefore controlling Phosphate levels from IPU units, outdoor chicken ranges and manure spreading is critical for the favourable status of fresh-water ecology. Phosphate has long been known to accumulate in soil, therefore current manure applications consitute a signficant future threat to rivers which will continue even if more stringent manure spreading regulations are introduced.

Table 32: Nitrogen and excreta production by poultry places

Poultry Type	N Kg/PA	Poop Tonnes/PM
1,000 replacement layer pullet places, up to 17 weeks	210	1.1
1,000 laying hens in cages, 17 weeks and over	400	3.5
1,000 laying hen places, free range (note b), 17 weeks and over (note b)	530	3.5
1,000 broiler places	330	1.5
1,000 broiler breeder places, 25 weeks and over	700	3.4

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Poop and Nitrogen calculations based on data from DEFRA NVZ Guidance Table 32 - Poultry, shown above.
Chicken Shed data prepared by B&R CPRW from publicly available Planning Applications via Powys County Council Planning Portal. Data as at 27/8/2020.

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