



Agriculture and Foodsecurity Network: "Inclusive Land Governance – Road to Better Life"

**Field Days September 7, 2016:
Land Governance in Switzerland**

Visit 7: Constructing outside building zone

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ENTWICKLUNG DER LANDWIRTSCHAFT UND DES LÄNDLICHEN RAUMS
DÉVELOPPEMENT DE L'AGRICULTURE ET DE L'ESPACE RURAL
SVILUPPO DELL'AGRICOLTURA E DELLE AREE RURALI
DEVELOPING AGRICULTURE AND RURAL AREAS

7 Constructing on agricultural land – “What’s the limit?”

Field day example: Agricultural construction activities in- and outside of building zone in Alberswil

The separation between construction areas and non-construction areas is one of the fundamental principles of the spatial planning law (SPL) in Switzerland. Of course this separation made a major contribution to safeguarding a minimum of productive agricultural land and to maintain an attractive landscape with a high recreational value. Another important effect is the comparably low prices for agricultural land, giving farmer families the opportunity to purchase their agricultural businesses on favourable and cost effective terms (which is of course also owed to the regulations of the law on peasants’ land rights (“Bundesgesetz über das Bäuerliche Bodenrecht” – see more in chapter 3.3).

But agricultural production needs buildings and new constructions too, so the spatial planning law and assigned ordinances and directives have to allow and explain exceptions – and this complicates matters quite a bit... The law declares the following types of constructions as compliant with zoning requirements in non-building zones:

- residential buildings for farmer families and their agricultural employees
- economical farm buildings
- economical buildings for energy production gained from wind, sun or biomass
- infrastructural works for agriculture and forestry

On the other hand, there are buildings in non-building zones that are not in compliance with the zoning requirements and none the less legal, like for example: buildings constructed before the enactment of the spatial planning law, conversions of former economical farm buildings, buildings for subsidiary enterprises with or without relation to the agriculture business, constructions and facilities for hobby animal keepers etc.

Ok so far – but talking of details: How much space does a farmer’s family really need? What defines an agricultural employee? Where is the limit for farming activities and allocated buildings? For what type and size of subsidiary business can a farmer build facilities in the non-building zone? Will a lawyer be allowed to build stables for his two horses outside the building zone? That’s where things get tricky...

7.1 Regulations for building outside building zones in the canton of Lucern

As usual the cantons, who are commissioned to implement spatial planning outside the building zone within their territory, enact slightly different interpretations of spatial planning regulations. We will in this chapter follow the canton of Lucern as an example and explain the Lucern instructions on the regulations for building outside the building zone published by the cantonal department for space and economy in 2016, based on the cantonal law and ordinance on planning and building (“Planungs- und Baugesetz” resp. “Planungs- und Bauverordnung”) which specify the standards of federal legislation.

7.2 General principles

Building permits outside the building zone are subject to strict requirements and only valid when issued by the responsible cantonal authority (communities can’t decide on their own). Whoever builds or makes changes to a building without permit risks to have to restore the legal state, even decades back and even when legal successors are concerned.

There is a number of building types and corresponding sizes that are zone compliant or not zone compliant whose realisation is permitted in the non-building zone and whose specifications are given in the instructions of the cantonal administration.

Buildings and facilities outside the building zone have in general to be integrated into the surrounding landscape, because they will characterise it with their size, proportions, design, type of construction, roof shape or colour. Constructions that interfere with the landscape will not be permitted.

7.3 Residential buildings

The most interesting (financially) use of buildings outside the building zone is residential. That’s why restrictions to create living space here are subject to a lot of strain. New residential buildings are permissible if:

- they serve an “agricultural business” according to the law on peasant land rights (→ see chapter 3.4.6)
- the residential building is necessary for operational reasons
- no preponderant interests are opposed to their installation or expansion

Renovations, moderate extensions and reconstructions of existing agricultural residential buildings are permissible too. The same applies for residential buildings already standing at the time of implementation of SPL (“altrechtliche Wohnbauten”).

Standard values for the permissible size of residential buildings:

- for agricultural businesses of up to 3 SMP (standard manpower → see chapter 3.4.6): a maximum of 300 m² for new constructions or 350 m² for expansion projects and a maximum of 3 residential units
- for agricultural businesses of more than 3 SMP (standard manpower → see chapter 3.4.6): a maximum of 350 m² for new constructions or 400 m² for expansion projects and a maximum of 4 residential units
- businesses with a very high seasonal manpower requirement (such as vegetable or berry production) shall be assessed on a case-by-case basis.

bestehend (Ausgangslage)	altrechtlich (vor 1.7.1972 erstellt)	neurechtlich (nach 1.7.1972 erstellt)
Um-, An- und Aufbau bestehendes Wohnhaus		
<p>300 m² aGF im EG und OG bestehend, 1.5 m Raumnöhe. Erweiterung einer zusätzlichen Wohnzelle (z. B. Anbau).</p>	<p>maximal 350 m² / 400 m² und 3 bzw. 4 Wohnzelle halten. Betrieb bis 3.5m Raumnöhe Ausbau OG (50 m², Faktor 1/3 = 25 m²) und Anbau EG/OG (125 m²) Betrieb mehr als 3.5m Raumnöhe Ausbau OG (50 m², Faktor 1/3 = 25 m²) und Anbau EG/OG (175 m²)</p>	<p>max. 350/400 m² Betrieb bis 3.5m Raumnöhe Ausbau OG (50 m²) bis auf total 350 m² möglich Betrieb mehr als 3.5m Raumnöhe Ausbau OG (50 m²) bis auf total 400 m² möglich</p>
Um-, An- und Aufbau bestehendes Wohnhaus mit angebaute Ökonometeil		
<p>300 m² aGF im EG und OG bestehend, 1.5 m Raumnöhe. Erweiterung einer zusätzlichen Wohnzelle (z. B. Anbau).</p>	<p>maximal 350 m² / 400 m² und 3 bzw. 4 Wohnzelle halten. Betrieb bis 3.5m Raumnöhe Ausbau OG (100 m², Faktor 1/3 = 50 m²) und Ein-/Umbau in Ökonometeil (100 m², Faktor 1 = 100 m²) Betrieb mit mehr als 3.5m Raumnöhe Ausbau OG (100 m², Faktor 1/3 = 50 m²) und Ein-/Umbau in Ökonometeil (150 m², Faktor 1 = 150 m²)</p>	<p>maximal 350 m² / 400 m² und 3 bzw. 4 Wohnzelle halten. Betrieb bis 3.5m Raumnöhe Ausbau OG (100 m²) und Ein-/Umbau in Ökonometeil (50 m²) Betrieb mit mehr als 3.5m Raumnöhe Ausbau OG (100 m²) und Ein-/Umbau in Ökonometeil (100 m²)</p>
Ersatzneubau anstelle eines bestehenden abzubrechenden Wohnhauses		
<p>300 m² aGF im EG und OG bestehend, OG zu Wohnzwecken nicht ausbaubar, Gebäude in einem eher schlechten Zustand. Erstellung eines neuen Wohnhauses mit zusätzlicher Wohnzelle (z. B. Anbau).</p>	<p>Betrieb bis 3.5m Raumnöhe Neubau anstelle des abzubrechenden Wohnhauses mit maximal 300 m² aGF und 3 Wohnungen Betrieb mehr als 3.5m Raumnöhe Neubau anstelle des abzubrechenden Wohnhauses mit maximal 350 m² und 4 Wohnungen</p>	
Neubau „Stöckli“		
<p>180 m² aGF im EG und OG bestehend, OG vollständig ausgebaut (40 m², ab 1.5 m Raumnöhe). Erstellung eines separaten Wohngebäudes (Stöckli).</p>	<p>maximal 300 m² / 350 m² und 3 bzw. 4 Wohnzelle halten. Betrieb bis 3.5m Raumnöhe Neubau „Stöckli“ (100 m²) Betrieb mehr als 3.5m Raumnöhe Neubau „Stöckli“ (150 m²)</p>	

The Lucern instruction delivers detailed explanations of how to calculate the size of the residual area. The example on the left of this page demonstrates the permissible constructing activities for new residential buildings, renovations or expansions, depending on:

- the initial situation (see left column)
 - residential building (top frame as well as third and fourth frame from top)
 - Residential building with attached economical farm building (in blue; second frame from top)
- the permissible living space depending on planned project (column in the middle and right):
 - renovation/expansion of a residential building existing before SPL (top line, middle column)
 - renovation/expansion of a residential building built after SPL (top line, right column)
 - renovation/expansion of a residential building with an economical expansion existing before SPL (second line, middle column)
 - renovation/expansion of a residential building with an economical expansion built after SPL (second line, right column)
 - replacement of an existing building which will be demolished (third line, right column)
 - new construction of residential building (for the old generation) in addition to an existing house (fourth line, right column)

7.4 Domestic sewage:

In principle, domestic sewage has to be connected to the public sewage system. Again, agricultural dwellings profit from an exception: Domestic sewage may be utilized, together with liquid animal manure, for fertilizing purposes in agriculture. To get this type of sewage management approved, the following conditions must be fulfilled:

- The concerned farm buildings are situated outside the building zone and are utilized by the agricultural business
- The liquid animal manure (undiluted) amounts to at least 25% of the total quantity
- The available storage capacities are sufficient and in good order
- In case the farm is situated in the parameter of a public sewage system, the domestic sewage must be mixed with at least the liquid manure of 8 livestock manure units (corresponds to the output of 8 milking cows)

7.5 Zone compliant economical farm buildings

The most obvious use of buildings outside the building zone is for agricultural production. Still there are limits to what can be erected under this purpose. Buildings are zone compliant when they serve for:

- soil-dependent production
- so called inner increase of production (“innere Aufstockung”), meaning that a soil-dependent business can build extensions for a soil-independent branch of production that does not exceed a defined dimension:
 - the contribution margin of the soil-independent production is smaller than that of the soil-dependent one
 - The potential of own plant production (dry matter) must cover at least 70% of the animal production demand
 - In case of soil-independent horticulture, the concerned production may amount to a maximum of 35% of the total vegetable and horticulture acreage or an absolute limit of 5'000 m²
- soil-independent production exceeding the limits of the “inner increase of production”, provided the relevant buildings are situated in a special agricultural zone (see below).

7.6 Special agricultural zones (“Speziallandwirtschaftszonen”)

In these special agricultural zones all buildings and facilities are zone compliant that serve for agricultural production, regardless of the method of their production (for example greenhouses for hors-sol cultivation or soil-independent animal keeping like chicken or pig fattening).

The installation of these zones has to follow the land use planning procedure (“Nutzungsplanverfahren”): it is subject to a comprehensive balancing of interests which has to take into account concerns of ecological compensation as well as protection of landscapes and historical sites, and it is finalized with a political decision.

7.6.1 Emission restrictions

Switzerland’s environmental protection law (“Umweltschutzgesetz”) declares the goal of limiting emissions (art.11), and it demands the definition of thresholds for air pollution in such a way that neither man, animal nor plant are endangered and the well-being of the population is not considerably disturbed (art. 14).

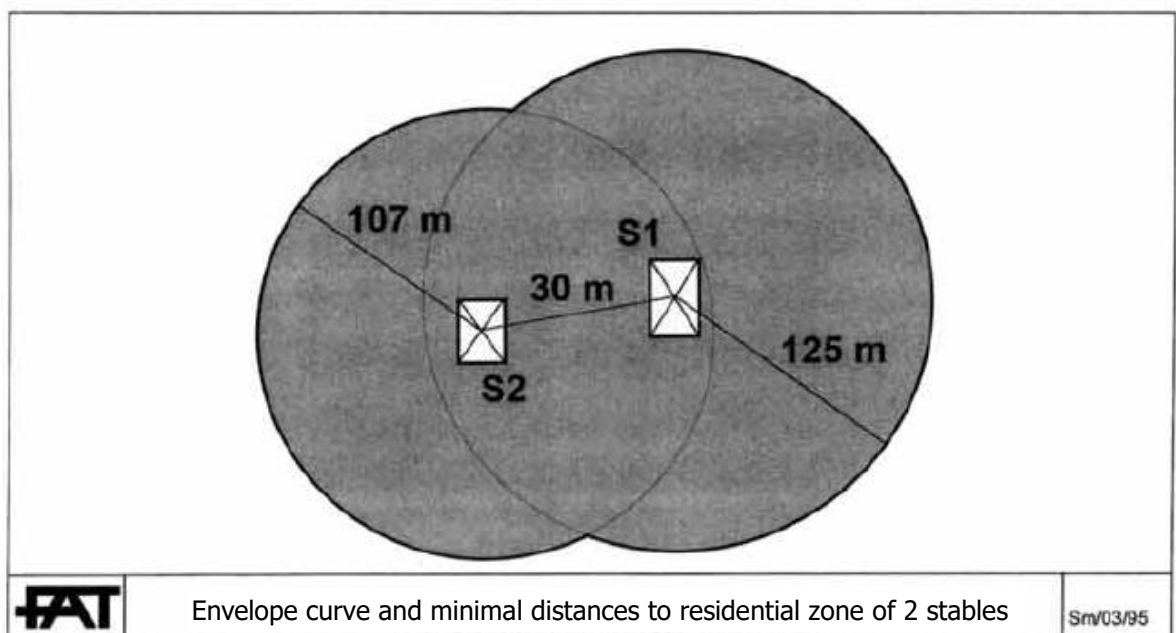
Complaints about annoying odour are among the most frequent problems the responsible authorities have to deal with in practice. Especially agricultural animal keeping close to residential zones is prone to provoke appeals. As measurements are extremely complex and specific odour emission thresholds for animal husbandry are missing, livestock keeping facilities have to respect minimal distances to avoid odour nuisance. The clean air act (“Luftreinhalteverordnung”) demands in its paragraph 51 of annex 2 that for new installations or alterations of existing facilities for animal husbandry, the recommendations of the federal research institute for agricultural economics and engineering concerning required minimum distances have to be applied (FAT-Bericht 476 “Mindestabstände von Tierhaltungsanlagen”). In addition, ventilation systems of stables have to meet the approved requirements of ventilation techniques.

	Switzerland	Canton of Lucerne	
		absolute figures	% Switzerl.
Agricultural businesses (n)	59'065	5'088	8.6
Agricultural surface (ha)	1'051'747	77'582	7.4
Agricultural surface/farm (ha)	17.8	15.2	
Arabel land (%)	25.9	16.6	
Milking cows (n)	726'875	76'238	10.5
Other bovine cattle (n)	877'412	74'864	8.5
Pigs (n)	1'540'129	412'248	26.8
Poultry (n)	8'474'239	965'765	11.4
Earnings (billion CHF)	10.8	1.08	10.0
Inhabitants	7'701'856	368,742	4.8

The canton of Lucerne has a high animal density compared to the national average and thus faces a difficult challenge concerning agricultural air and water pollution.

The minimal distance is calculated in four steps:

1. Determination of the odour load factor (OLF) according to animal type – for example:
 - Bovines per livestock unit: 0.15 OLF
 - Pigs per animal: from 0.15 to 0.35 OLF, depending on age and weight
 - Poultry per animal: fattening chicken 0.007 OLF, laying hens 0.010 OLF, turkey 0.015 OLF



Example: Graphic display of minimal distance around an installation with two stable buildings

Stable 1: 30 cows and 110 fattening pigs (TOL = 26.5, ND = 100.9 m, CF = 1.238, MD = 125 m)
 Stable 2: 1'000 laying hens (TOL = 10, ND = 59 m, CF = 1.813, MD = 107 m)

2. Calculation of Total odour load (TOL):
= sum of TOLs of each species kept in the concerned building (= number of animals * OLF per species)
3. Calculation of norm distance (ND):
 $ND = 43 * \ln(TOL) - 40$
4. Determination of minimal distance by rating the norm distance with correction factors (CF) for husbandry system, type of ventilation, utilisation of filters and location of stable (flat, slope or basin):
Minimal distance MD = $ND * CF_1 * CF_2 * \dots * CF_9$

The responsible cantonal authority has issued an EXCEL-program to calculate minimal distances around stables.

7.6.2 Lucerne Sub-plan Ammoniac ("Teilplan Ammoniak")

With an action plan "air pollution control, sub-plan ammoniac", the government of Lucerne has passed different measures to comply with the thresholds for immissions in 2007. The goal was to stabilise ammoniac emissions on the level of the year 2000 till 2010, and then to reduce the emissions by 30% till 2030. The long-term objective will be to reduce emissions below the critical loads.

Among the adopted actions of sub-plan ammoniac are measures that bring further restrictions for agricultural construction projects:

- **Limitation of ammoniac emissions for buildings and facilities of individual farms**

As of 2010, construction permits are coupled with the duty to reduce ammoniac emissions of the concerned farm by 20%. This requirement only concerns new constructions or conversions with direct relation to animal keeping (stable buildings and facilities).

- **Limitation in special agricultural zones for livestock keeping**

Agricultural buildings and facilities that require first the designation of a special agricultural zone have to reduce the ammoniac emissions of their overall production by 70%.

- **Guidelines for calculation of ammoniac emissions**

The Canton of Lucerne provides a tool for the calculation of ammoniac emissions of individual farms called "Agrammon" and has expanded it with specific cantonal amendments. A calculation with Agrammon (and subsequently no reduction of ammoniac emissions) is required in case:

- the project aims at an improvement of animal welfare and brings no increase in livestock
- low livestock density (below the limits for basic direct payments on permanent pastures and grassland, which are defined depending on production zones: lowland = 1.0 livestock units (LU)/ha, hills = 0.8 LU/ha, mountain zone (MZ) 1 = 0.7 LU/ha, MZ2 = 0.6 LU/ha, MZ3 = 0.5 LU/ha, MZ4 = 0.4 LU/ha)
- Construction projects with less than 10 livestock units