



## REPORT

**For** : IFU.  
**From** : Moreno Sáez & Avilés Abogados.  
**Ref.** : Santa Francisca Pig Farm.  
**Date** : July 24<sup>th</sup>, 2022.

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This following report (the “**Report**”), has been prepared upon the request of the Danish Investment Fund for Developing Countries (“**IFU**”), after certain news regarding a potential inadequate management of the Santa Francisca Pig Farm (“**Farm**”), located in Las Palmas Road, km. 5, Chépica Commune, in the Libertador General Bernardo O’Higgins region, central zone of Chile, were disclosed to the public opinion through Chilean and Danish news agencies.

Therefore, the objective of this Report is to solve the inquiries and requirements of IFU, related with the news regarding the management and operation of the Farm. In this context, the scope of our review has been limited to an examination of, and our findings in this report rely exclusively on the public information available, as well as the one provided by COEXCA S.A. (“**COEXCA**”), and the on-site visit to the Farm on July 1<sup>st</sup>, 2022, with ANAGEA environmental consulting company and NIRAS consultant Peter Nygaard.

### I. THE SANTA FRANCISCA PIG FARM

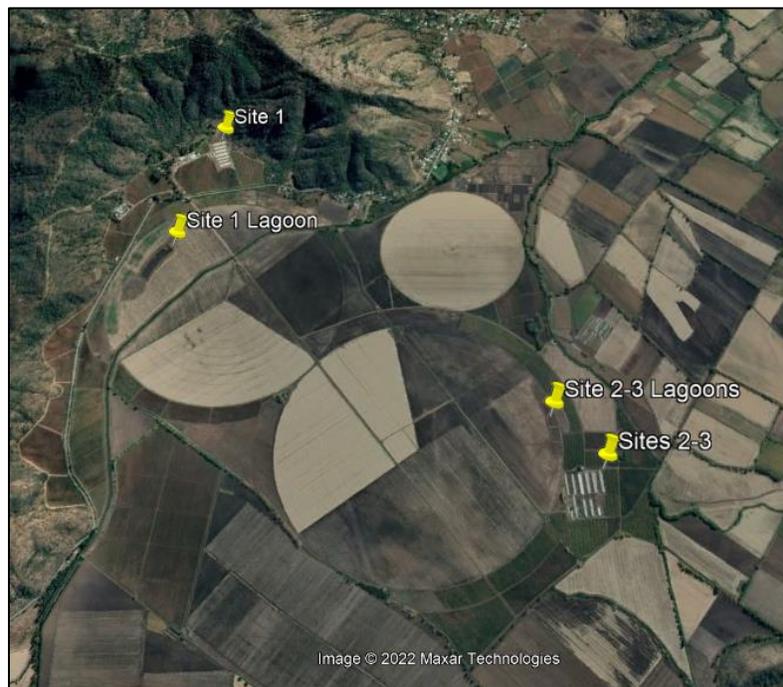
The Farm started its operation on 1994<sup>1</sup> and the activities developed thereof consist on the production of pigs for the food industry, considering all of its stages: mating, gestation, farrowing, and fattening. The facilities of the Farm have a capacity of 1,250 breeding females (Site 1), and around 20,000 animals from weaning to sale (Sites 2 and 3).

The Farm has a slurry treatment system that consists of the following elements:

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<sup>1</sup> COEXCA took over the Farm operation through its subsidiary Agrícola COEXCA S.A. in 2016. On March 2019, ACSA filed an Environmental Impact Statement (“**DIA**”, *Declaración de Impacto Ambiental* in Spanish) to the Environmental Impact Assessment System (“**SEIA**”, *Sistema de Evaluación de Impacto Ambiental* in Spanish), whose objective was to improve the environmental standards of the Farm through the implementation of waste management technologies, and, at the same time, to expand the current production capacity by building and enabling new facilities, to supplement the existing ones. As a result of the assessment process, on March, 2020, a favorable Environmental Assessment Resolution, was granted for the operation of the Farm. According to the information provided by ACSA, the modifications described on the environmental permit of the Farm have not been executed to this date.

- **Ditches:** Located underneath the stables, to receive the slurry of the pigs<sup>2</sup>. The slurry is stockpiled until it is discharged to the homogenizer well.
- **Slurry transportation:** The slurry is transported by gravity through underground pipes, from the ditches to the homogenizer well.
- **Homogenizer:** It mixes the slurry through stirrers. The mixed slurry is then pumped into a press.
- **Fan or Rotating press:** it separates the slurry into liquid and solid parts through a mesh filter (0.05 mm).
- **Application of the liquid part of the slurry:** The liquid effluent is transferred to accumulation lagoons through underground pipes and open channels. Currently, COEXCA is developing a project for the channels to be closed.
- **Accumulation lagoon or pond:** It receives the liquid part of the slurry to use it later for watering or fertilizing the fields. The lagoon is emptied every April, to receive the rains during the rainy season, preventing an overflow.



Source: Own production based on Google Earth.

According to our observations on the onsite visit to the Farm, the slurry management system located on Site 1 currently operates with one 5,000 m<sup>3</sup> capacity accumulation lagoon which is not waterproofed on its base, nor covered on its upper part.

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<sup>2</sup> The slurry is a mixture of urine, stool and water.



Sites 2 and 3 have two qualified lagoons (in the past there were 5 lagoons in total), each with a 1,000 m<sup>3</sup> capacity. These are also not waterproofed on its base, nor covered on its upper part.

In addition, two new lagoons of 9,000 m<sup>3</sup> capacity each are under construction on Site 2-3. Such new facilities aim to improve the Farm's operation due to administrative and judicial proceedings related the management of the slurry. These lagoons will be waterproofed and covered with HDPE to prevent infiltrations and contamination of the soil and water. Also, they will have a gas extraction system with a carbon activated filter that captures odorant compounds. These lagoons are expected to start their operation on July 2022, and will replace the current lagoons of Site 2-3.

The Farm has a Slurry Application Plan ("**SAP**") for the application of the solid and liquid parts of the slurry on the fields, which was submitted to the Agricultural and Livestock Service ("**SAG**") in May 2022. The SAP will be described further on this Report. Please note that all SAPs operates on a seasonal basis, therefore, this is the one presented to the authority for the use of the slurry over the year 2022. The Farm also informed us that its past SAPs were presented yearly.

As a consequence of measures issued by the Health Authority, the solid part of the slurry is currently stockpiled within the Farm and then sent for disposal to duly authorized waste management third-party sites.

Finally, regarding the waste management of mortalities, it should be noted that they use to be disposed of in ditches, however, now they are properly stockpiled in Reefer containers and sent to duly authorized third-party rendering plants and/or sites for final disposal. This change on waste management is also a result of the measures issued by the Health Authority as it will be described below.

Videos and photographs of the Farm and the Santa Francisca installations taken on the inspection day, and those delivered by Agrícola COEXCA S.A. ("**ACSA**")<sup>3</sup>, can be reviewed on the following link: <https://www.dropbox.com/sh/thto9wmccismvqz/AACH-VY3HDkTFNY4fCi3a2EFa?dl=0>.

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<sup>3</sup> Coexca's subsidiary that operates the Farm.



## II. BACKGROUND OF THE SITUATION THAT GAVE RISE TO THE NEWS IN DANWATCH

### a. ADMINISTRATIVE PROCEEDINGS

#### i. ENVIRONMENTAL SUPERINTENDENCY

Between December, 2021 and January 12<sup>th</sup>, 2022, the Environmental Superintendency (“**SMA**”) received 12 complaints regarding the Farm’s operation. One of the complaints was issued by the Municipality of Chépica, who argued the following: (i) mortalities are being stockpiled in wells without any kind of treatment; (ii) slurry is being spread on the Farm in an inadequate manner, creating nuisances for the neighboring communities, such as bad odors and vectors; and (iii) part of the slurry is being poured in natural streams that run through Santa Francisca’s Field, polluting a resource that is used for watering crops in nearby lands.

The SMA visited the Farm on January 11<sup>th</sup>, 2022, and informed said complaints to the Regional Ministerial Secretary of Health (“**Seremi de Salud**” for its name in Spanish and/or “**Health Authority**”) and to the Regional Bureau of the Agricultural and Livestock Service (“**SAG**”, also for its name in Spanish) of the O’Higgins Region.

On that visit, the SMA confirmed the following regarding the slurry treatment system of the Farm:

- Slurry was transported through underground pipes, from the pavilions to the homogenizer well on Site 1.
- The slurry was accumulated in a circular homogenizer well, which was uncovered on the date of inspection.
- A parabolic filter that separates the liquid and solid parts of the slurry operates alongside the homogenizer well. The system was designed so that the solid part fell directly from the filter to a drying field (concrete floor).
- The solid part of the slurry was moist, and the liquids produced by the sludge that fell to the floor dripped to parts of the ground that were not waterproofed.
- The liquid part of the slurry was carried to an accumulation pond through pipes, to be used for watering later.
- The accumulation pond was not at its full capacity, nor was it waterproofed.
- Strong odors, grubs, and flies were present on the premises, except in the accumulation pond.



Also, regarding the mortalities management, the SMA stated that:

- There were 4 active ditches that were only covered with a lid or metallic structure.
- The remains were arranged until the ditch was full, then covered, and a new one was opened.
- There was an unbearable putrefied smell.

The SMA made a second visit to the Farm on January 19<sup>th</sup>, 2022, jointly with the Regional Ministerial Secretary of Health. On said occasion, it determined that the dead animals had not been taken out of the ditches or wells yet, that the solid part of the slurry that had been verified as moist had been applied to the Farm, and that the activities that aimed to dilute the water from a channel that crossed the field, by introducing clean water obtained from a waterwheel, were being executed.

It is worth noting that after such inspections, the SMA has not started a sanction procedure against the Company. Furthermore, based on the report issued regarding the appeals for legal protection to which we will refer below, such authority is assessing the need to take further action.

Nonetheless, in the report issued under the requirement of the Court of Appeals of Rancagua, to which we will refer later, the SMA stated that it is working on the sanitary situation jointly with local authorities, the Regional Ministerial Secretary of Health, and SAG.

#### **ii. REGIONAL MINISTERIAL SECRETARY OF HEALTH**

The Regional Ministerial Secretary of Health, after receiving the complaints informed by the SMA, has carried out several inspections and initiated two administrative sanctioning proceedings (*"sumarios sanitarios"* in Spanish).

The first inspection took place on January 11<sup>th</sup>, 2022. The record of the authority stated that the solid part of the slurry was being stockpiled outdoors without encapsulation nor odor control, and was also being applied to agricultural soils, with a high moisture content. Additionally, it stated that the ditches used for the waste management of pig mortalities were afterwards covered with dirt, without previous treatment and they were not being sent to an authorized site for final disposal.



Additionally, it stated that a putrefied smell was felt in the “Lima” area, adjacent to the Farm, where vectors (flies) were found too. Finally, it stated that “La Candelaria” sector was free of odors and vectors.

According to the finding described above, on that same visit, the public officer of the Health Authority that made the inspection determined that there was a potential risk for the health of the nearby population and started an administrative sanctioning proceeding (the first one) while, at the same time, it issued an injunction called “**prohibition to operate**” concerning the operation of the Farm.

**Furthermore, Exempt Resolution N° 249, January 14<sup>th</sup>, 2022**, issued by the hierarchical authority of the public officer who conducted the inspection, ratified the injunction as required on Chilean sanitary legislation<sup>4</sup>.

Please note that ACSA has filed its defense regarding the sanctioning procedure, timely.

On January 19<sup>th</sup>, 2022, a second inspection of the Health Authority took place. In this occasion, another public officer took a water sample from one of the accumulation lagoons (Site 1) and four other samples from water channels that cross the fields. Two of those other samples were obtained inside the fields of Santa Francisca, while the other two were obtained outside in a nearby location. All of them were analyzed to confirm or discard the potential presence of fecal coliforms.

Based on the results, the Health Authority determined that the slurry effluent (regarding the sample of the accumulation lagoon) did not comply with the NCh 1333 limit (1000 MNP/100 ml), which is the official Chilean regulation for the watering of crops. It also noted that the Company continued stockpiling dead pigs inside ditches, without a proper waste management system, and applying the solid part of the slurry irregularly to the fields.

For these reasons, **a new injunction called “closing” was issued by the public officer who conducted the inspection. However, according to Exempt Resolution N° 325, 2022, issued the following day (January 20<sup>th</sup>, 2022), the hierarchical authority annulled the closure order issued by said inspector on January 19<sup>th</sup>**, alleging that this new precautionary measure was excessive, especially considering that the prohibition to operate that had been issued before, was enough to solve the sanitary problems observed at the Farm.

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<sup>4</sup> As regulated on article 178 of the Sanitary Code of Chile



**Nevertheless, two concrete sanitary measures were ordered on such Exempt Resolution: (i) the prohibition of disposal of dead pigs on the fields, ordering to send them to an authorized site for final disposal; and (ii) the prohibition of disposal of the solid part of the slurry on the fields, ordering to send these to an authorized site for final disposal as well.**

Please note that at this point, ACSA was already making adjustments on its operations as it intended to solve its sanitary faults before receiving the sanctions of the authority.

A third inspection was conducted on January 31<sup>st</sup>, 2022. In that occasion the Regional Ministerial Secretary of Health stated that the ditches containing dead pigs had been completely sealed and the dead pigs were being stockpiled temporarily inside a Reefer container and dispatched to a *rendering* plant and/or to an authorized final waste disposal site, as it was ordered by such health authority.

However, the authority also observed that the press on Site 1 did not fulfill its function properly, since the sludge contained more than an 80% moisture, larvae, pupas and flies, therefore, it determined that the larvicide that was being used was inefficient.

Finally, regarding field irrigation with the liquid part of the slurry, it confirmed that no larvae nor pupas were observed, and only demanded that the liquid was incorporated properly to the ground, to avoid huddling.

During the fourth inspection on March 8<sup>th</sup>, 2022, the Health Authority confirmed the total removal of active ditches and that no odors nor vectors were perceived. Also, it stated that the humidity of the solid part of the slurry had decreased (in a range of 50% to 65%).

Also, to comply with the requirements of the previous visit, the Company increased the size of the disc of the harrow in the irrigation application system to incorporate the liquid part of the slurry deeper into the ground. Moreover, the Reefer remained operative, and the mortalities were withdrawn twice a month.

The Health Authority established on its record that there was a “*substantial improvement in the processes*” of the Company, who was also, at the same time, conducting odor and vectors studies to obtain an even higher environmental standard.



**Later, on March 10th, 2022, the final decision regarding the sanction procedure initiated by the Regional Ministerial Secretary of Health was issued, and determined a 500 UTM fine to the Company (CLP 28,778,500 equivalent to approximately USD 35,378).**

**Also, the prohibition to operate was raised, but the specific measures of (i) non-disposal of dead pigs inside the farm and (ii) not using the solid part of the sludge on the farm were maintained.**

**This resolution was appealed for reconsideration by ACSA, before the same authority, in order to lower the amount of the fine. Such administrative proceeding has not been settled yet.** In case the decision of the Health Authority is not favorable for the Company, the latter may file a judicial complaint against the Health Secretariat's decision before a Civil Court.

On March 21<sup>st</sup>, 2022, a **new administrative sanctioning procedure** was initiated against the Company. According to the public officer who conducted the visit, the solid part of the slurry had seemingly been reapplied to the farm (remnants to irrigation channel), and a solid material similar to that verified inside the accumulation pond was found, with presence of odors and vectors.

The Company answered to these charges (defense), stating this was not effective, and that the public officer t who conducted the inspection had been previously accused of lack of probity for acts against the law, and should have refrained from intervening in said inspection, thus suggesting that his conclusions were biased.

**Said proceeding is still pending, and judgment has not been issued by the Health Authority.**

Finally, a sixth inspection was conducted on March 29<sup>th</sup>, 2022. However, such visit was ordered by the Court of Appeals of Rancagua during an appeals process for legal protection to which we will refer further on. The record of the Health Authority on such visit determined the following:

- The ditches remain closed. Reefer containers are used. Dead pigs are sent regularly to an authorized site.
- No odors nor vectors are present.
- Encapsulated spreader plants. Solid part of the slurry with less than 75% moisture.



- Liquid from slurry used for irrigation. Not poured into channels. Accumulated in 3 dams, 1 per site.
  - No considerable number of flies.
  - Site 2 and 3 irrigation channels fit with tubes, without use nor presence of odors nor vectors.

### **iii. AGRICULTURAL AND LIVESTOCK SERVICE**

SAG has inspected the farm twice during 2022. The first inspection took place on March 9<sup>th</sup>, 2022, and aimed to review if the operation was complying with the Guidelines for the Official Certification Program for Livestock (“**PABCO**”), which determines the standards to guarantee the quality of products exported to other countries, and for animal wellbeing.

The second visit took place on March 30<sup>th</sup>, 2022, and aimed to discover potential water and soil contamination. No legal nor material breaches were found according to the register made by SAG.

It is relevant to have in mind that during the judicial procedure before the Court of Appeals (described in detail below), SAG noted that the pig production system consists of a series of continuous processes, therefore an abrupt shutdown of activities is not recommendable. On the contrary, an eventual stoppage of operations should be carried out in a progressive manner, in order to diminish the pig population without affecting their wellbeing, nor causing health problems and stress in the existing population, considering that the lack of space may affect their conduct when they were ready for dispatch and commercialization, and even lead to worse problems such as cannibalism.

### **b. LEGAL PROCEEDINGS**

Two appeals for legal protection were filed against the alleged acts confirmed by the administrative authorities, and the grounds for such claims are essentially the same as the facts described above regarding nuisances to the community. Therefore, according to the plaintiff such nuisances may affect two fundamental rights which are guaranteed in the Constitution: (i) the right to live in a pollution-free environment, and (ii) the right to physical and psychological integrity.

The first case, titled “Morales vs. Agrícola COEXCA S.A.” was filed on January 19<sup>th</sup>, 2022, by the Major of Chépica and a group of city councilpersons and neighbors. It is being

processed under case No. 111-2022. Its petition to the Court of Appeals to issue an injunction called “Temporary Injunction Against Further Process” was rejected.

The second appeal for legal protection titled “Palominos vs. COEXCA S.A.” was filed on February 2<sup>nd</sup>, 2022, by attorney Karina Lorca, on behalf of other councilpersons and neighbors. It is being processed under Case No. 219-2022. In this case, a “Temporary Injunction Against Further Process” was also requested, and granted this time on February 8<sup>th</sup>, 2022.

ACSA filed an appeal for reversal against this decision, which was initially denied by the Court of Appeals.

Both appeals for legal protection were accumulated for their processing on March 18<sup>th</sup>, 2022, and requested the (i) SMA, (ii) the Regional Ministerial Secretary of Health, (iii) SAG and the (iv) Environment Undersecretariat to issue reports, all of which is recorded electronically<sup>5</sup>.

Within these legal actions, ACSA presented its defense, arguing that both appeals for legal protection were based only on what was set forth in the records of the Regional Ministerial Secretary of Health, which accounted for deficiencies that had been already corrected through the following measures:

- Closing of ditches for dead pigs, Reefer installation, and dispatch of mortalities to an authorized disposal site.
- No more application of the solid part of the slurry on the fields, and its transportation to an authorized site for disposal, until a stabilization and authorization method to allow its use on the fields again is available.
- Execution of technical reports on odors and their impact (H<sub>2</sub>S y NH<sub>3</sub>).
- Execution of a study to monitor vectors.
- Update of the company’s internal vectors protocol and application of new and more efficient pesticides.
- Improvements regarding the emptying system of the solid part of the slurry, which is now conducted to a container (chute) instead of decanting it directly to the ground.
- Improvement regarding the deepness to which the liquid part of the slurry is applied, due to an improvement in the harrow used in the irrigation system.

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<sup>5</sup> They can be reviewed at: <https://oficinajudicialvirtual.pjud.cl/indexN.php>



ACSA also based its defense on the fact that the SAG inspected the Farm and did not detect any breaches, and on a report prepared by its consultant “Mejores Prácticas”, whose copy was attached to its written defense, which disregards each and every one of the allegations filed in the appeals for legal protection with technical and sufficient data.

It is worth noting that on April 7<sup>th</sup>, 2022, while processing the appeals for legal protection, **ACSA requested the uplifting of the “Temporary Injunction Against Further Process” ordered by the Court of Appeals**, based on new evidence held to date.

**Such request was granted on April 21<sup>st</sup>, 2022.**

The hearing of these cases and the pleadings took place on June 2<sup>nd</sup>, 2022, which means that only the judgment (ruling) is currently pending now. The final decision may be subject to an appeal before the Supreme Court of Chile.

### **III. IFU REQUIREMENTS**

IFU has requested us to analyze the compliance and implementation state of national regulation standards for slurry management in the Farm, including as a minimum, the following aspects:

#### **a. ENVIRONMENTAL ISSUES**

- **The status on the two injunctions regarding the management of mortalities and the solid part of the slurry. Are these cases closed? What did COEXCA do to close these cases? And if not, why not?**

There are no administrative nor judicial injunctions of prohibition to operate, nor to close the facilities, in force to date.

However, two specific measures ordered by the Regional Ministerial Secretary of Health remain in force: (i) the prohibition of disposal of mortalities within the Farm, which must be sent to an authorized site for final disposal; and (ii) the prohibition of application of the solid part of the slurry on the field, which must also be sent to an authorized site for final disposal.



- **An assessment regarding the implementation of both national and EU-regulation standards for the management of slurry. This should include as a minimum:**
  - **The current storage capacity and the transportation of slurry from the stables to storage, the separation of solid and liquid slurry, the transportation from the storage to the field, and methods to apply the slurry to the fields.**

The amount of solid slurry produced in the Farm consists of 2,857 kg/day, which considers 571 kg/day for Site 1 and 2,286 kg/day for Sites 2 and 3, as shown in Santa Francisca's SAP.

Regarding the liquid part of the slurry, a production of 150 m<sup>3</sup>/day is projected, considering 30 m<sup>3</sup>/day for Site 1 and 120 m<sup>3</sup>/day for Sites 2 and 3.

The storage system consists of one 5,000 m<sup>3</sup> lagoon on Site 1 and two lagoons on Sites 2 and 3 of 1,000 m<sup>3</sup> each (2,000 m<sup>3</sup> in total). Two lagoons of 9,000 m<sup>3</sup> each for Sites 2 and 3, which will replace the existing ones, are under construction. They are expected to be operational on July 2022.

Slurry is transported to the treatment system through buried pipes, where they are standardized in a covered homogenizer well, and then delivered into a rotating splitter that contains a 0.5 mm. mesh.

At present, in compliance with the measures ordered by the Regional Ministerial Secretary of Health, the solid part of the slurry is poured into a container (previously, it fell directly on the ground on a concrete slab), and is dispatched to an authorized site for final disposal once full, approximately every two weeks. In other words, the solid part of the slurry is no longer being used as a soil enhancer before sowing time<sup>6</sup>.

The liquid part of the slurry is sent from the partitioning system to accumulation lagoons, through channels and pipes. The channel is not covered nor sealed on its base in Site 1. Regarding Sites 2 and 3, they are sent through sealed PVC pipelines.

Regarding their application on the fields (they are only used on Santa Francisca's fields), the solid part was carried manually on carts for its application (at present, the container located in the divider is hooked to a truck that transports it to an authorized site for final disposal); and the liquid part, in the case of Corn, is boosted from the lagoon to a pivot system

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<sup>6</sup> This, notwithstanding that the company staff expressed during the visit that it would request a new authorization to use it on the Fields, or at least to sell it in case said authorization could not be obtained.

(sprinklers hung on a main axis that is moved over the crops), and in the case of Wheat, a flooding irrigation system and a reel (hose) irrigation system are used.

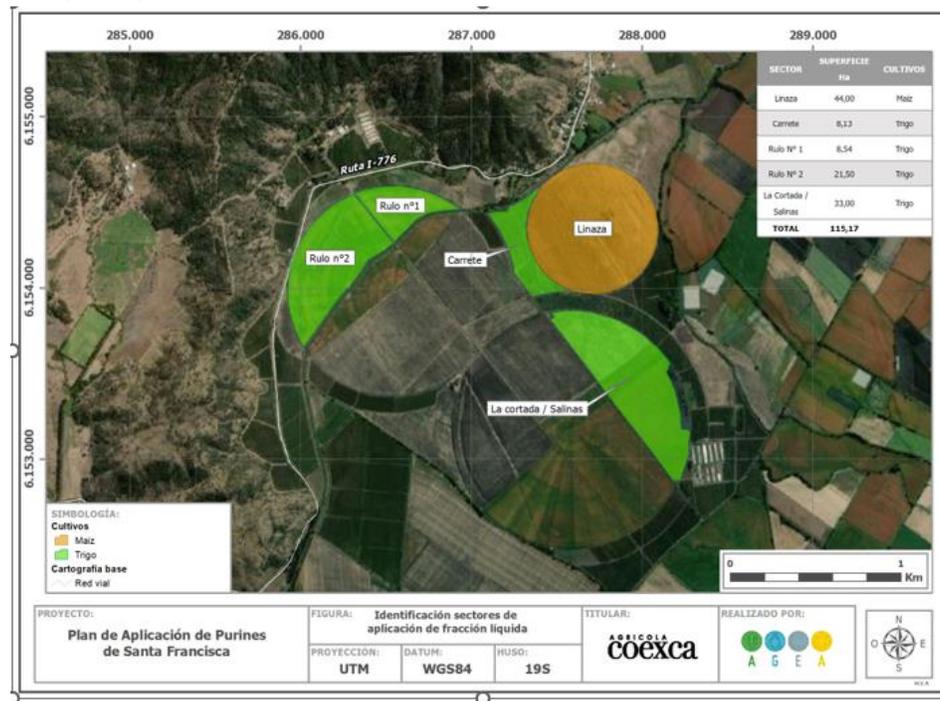
- **The type of crops the slurry is applied to and the size (in hectares) of the fields where the slurry is applied, including annual application plans (how much? How often? How many days of the year?).**

As it can be seen in the SAP, 5 management units for the fields were defined. The surface area corresponding to each irrigation sector is provided in the following table.

SECTOR	SURFACE Ha	CROPS
Linaza	44.00	Corn
Carrete	8.13	Wheat
Rulo N° 1	8.54	Wheat
Rulo N° 2	21.50	Wheat
La Cortada / Salinas	33.00	Wheat
<b>TOTAL</b>	<b>115.17</b>	

Source: SAP

The following image displays the areas referred to on the previous table:



Source: SAP



The farm produces an approximate total of liquid effluent of 150 m<sup>3</sup> per day, which can be translated in daily volumes of 587.64 m<sup>3</sup>/ha/day of available flow per hectare (taking into account the available 93.17 hectares, given that 22 hectares from a total of 115 were discarded for having nitrogen volumes too high to be irrigated).

As the water demand for crops is higher than the volume of slurry produced by the Farm, the difference is supplied by water obtained from the traditional irrigation system, of which ACSA has the consumptive usage water rights, and is pumped from the existing wells inside the Farm.

MONTH	Gross Water Demand Corn (pivot) mm	Gross Water Demand Wheat (reel) mm	Gross Water Demand Wheat (flood) mm	Farm effluent Supply mm
January	325.78	244.80	612.00	4.9
February	302.24	262.59	656.48	4.9
March	234.80	121.65	304.13	4.9
April	-44.00	42.60	106.50	4.9
May	-284.44	-149.77	-374.42	4.9
June	-426.44	-247.09	-617.73	4.9
July	-373.33	-218.13	-545.33	4.0
August	-248.89	-140.56	-351.40	4.9
September	-104.31	-54.21	-135.53	4.9
October	27.56	16.53	41.33	4.9
November	208.94	115.75	289.37	4.9
December	433.14	178.64	446.60	4.9

Source: SAP

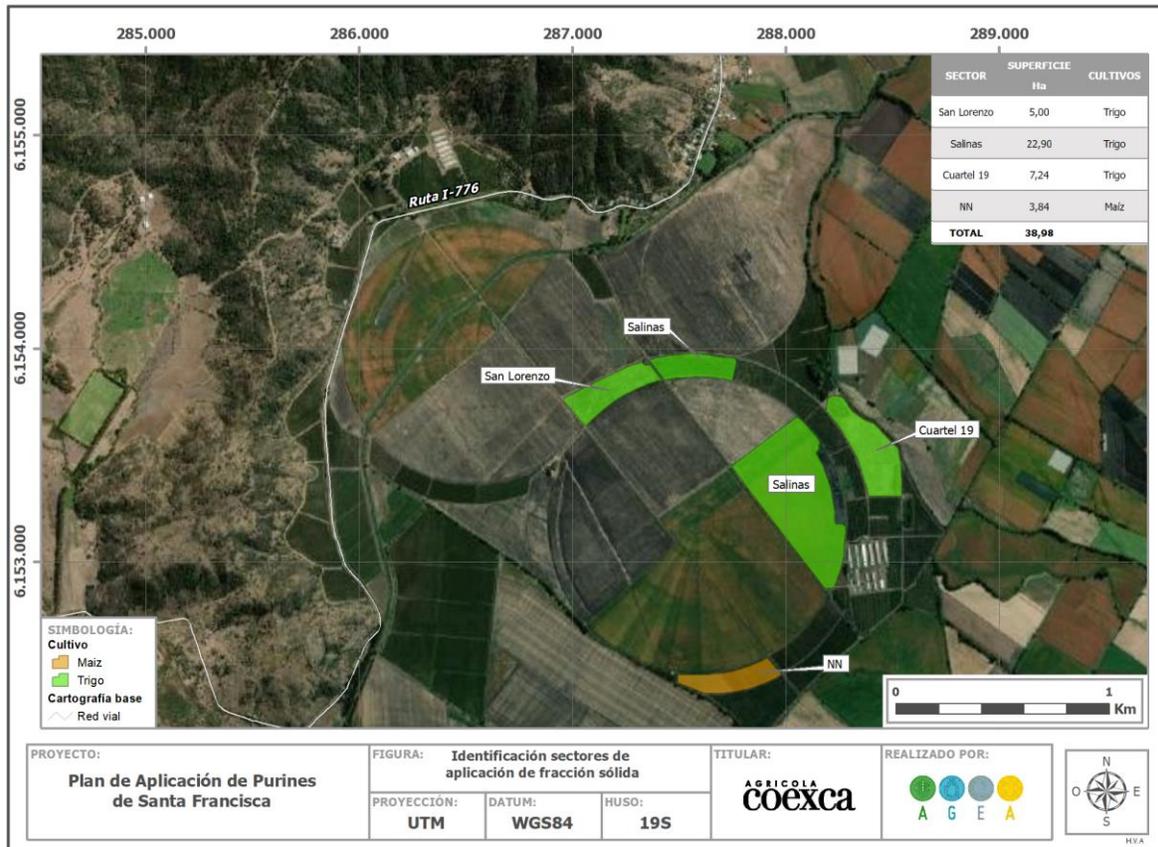
The solid part of the slurry could be applied on 38.98 hectares destined for fertilization (prior to sowing time), as informed by the SAP, which took place according to the internal requirements of the Farm.

SECTOR	SURFACE Has	CROPS
San Lorenzo	5.00	Wheat



Salinas	22.90	Wheat
Cuartel 19	7.24	Wheat
NN	3.84	Corn
<b>TOTAL</b>	<b>38.98</b>	

Source: SAP



Source: SAP

- A conclusion on whether the current methods are compliant with EU-regulations, and if not, the plans for future compliance including requirements for the planned increase to 2,500 sows.

This information will be provided directly to IFU by consultant Peter Nygaard. A copy of his report is annexed at the end of our briefing.

- Please explain the coli bacteria reports from the authorities and the following samples. The report from the authorities states that the level was 92 times above

**standard, but this is contested by a later report. Please describe the full background for taking the coli samples and the purpose of these samples, and explain which standards the authorities are referring to. What is the process outcome following the samples and the results?**

As described on the previous chapter, the Health Authority took water samples from different parts of the Farm (and locations nearby) for analysis. One of these samples, which delivered a 92,000 MPN/100 ml result, was taken directly from the accumulation lagoon of Site 1. The Regional Ministerial Secretary of Health noted that it did not comply with the 1,000 MPN/100 ml parameter set by NCh 1333 (Chilean official disposition), which is a standardized and requirable limit for irrigation.

The “*Verification of COEXCA’s Santa Francisca Pig Farm’s compliance with health and environmental measures*” Report, presented by ACSA to the Health Authority as part of its evidence in the health sanction procedure, clarifies that NCh 1333 expressly states on its clause 6.2 that the 1,000 MNP/100 ml limit is only applicable to “*irrigation water intended for fruit and vegetable farming developed at ground level, usually consumed in its raw state*”, which is not applicable in this case, given the fact that only wheat and corn processed in the pork feed mill is grown on the fields.

It is worth noting that the other samples, taken from the Zapal and Lima channels that runs through the Farm, whose waters are used to irrigate fields located on third-party lands, **showed normal levels of compliance with the fecal matter parameter:**

Código Informe	Coordenadas UTM Huso 19 S		Descripción del lugar de muestreo	Resultado (NMP/100 ml)
R-1-2022-61	286.155	6.154.225	Efluente tratado Agrícola COEXCA	92.000
R-2-2022-62	286.032	6.153.398	Aguas arriba Estero Lima	93
R-3-2022-63	286.219	6.152.507	División aguas arriba Estero El Zapal y Estero San Antonio	700
R-4-2022-64	286.262	6.155.033	Aguas abajo Estero El Zapal	330
R-5-2022-65	286.108	6.155.095	Aguas abajo Estero Lima	330

The following image shows the zone from where the samples were obtained:



Source: Own production based on Google Earth.

In short, the assertion regarding the 92 times excess of fecal matter concentration is not correct, given that the Health Authority made a mistake when taking into account the parameters for watering water, considering values that are only required for certain fruit and vegetable farms which production is for human consumption.

On the other hand, even though said comparison is not applicable, the report from consultant Mejores Prácticas, presented by ACSA, refers to a methodological error regarding the affirmation of having exceeded the limit contained in NCh 1333 by 92 times, given that a logarithmic scale is used in this case, therefore, the alleged excess in the water quality standard would be of 1.96 times and not the aforementioned 92 times.

- **The review should clarify the likelihood / possibility of any contamination to the streams/ rivers from the farm. What is the river water used for upstream /downstream? Are there other possible sources of coli bacteria contamination nearby? Additionally, what mid- and long-term impacts on the local environment and the communities are likely due to high coli bacteria levels?**
- **The article from Danwatch mentions that the second visit on January 19<sup>th</sup> included samples from the water channels and treated wastewater that is used to water neighboring fields where corn, plums, and pineapples are grown. This is contested by COEXCA. The review needs to clarify where the samples were taken, and if any wastewater or other liquids handled by COEXCA are used for**

**watering neighboring fields. The review should also determine if said crops, especially pineapples, are grown on nearby fields.**

No evidence that accounts for the contamination of water from the streams that crosses the fields due to the irrigation applied is noted from our review, considering that (i) the SAP establishes a buffer or security area to prevent the liquid part of the slurry used for watering from getting to water courses, (ii) the NCh 1333 irrigation limit is not applicable to the Farm, and (iii) SAG inspected the fields and concluded that there was no ground nor water contamination.

Thus, even though Pivot N°2 passes close to the Zapal channel, it does not cover it, and an approximate distance of 10 meters of separation exists from its closest point.

Regarding Pivot N°3, the irrigation system is very far away from the stream.



Source: Own production based on Google Earth



Source: Own production.

Notwithstanding the foregoing, it should be noted that the SAP indicates that the phreatic water table of the fields is located between 2 to 4 meters below the surface, therefore there is no certainty to stand that the three operational accumulation lagoons are or are not leaking some percentage of it, due to the fact that they are not waterproofed on its bottom.

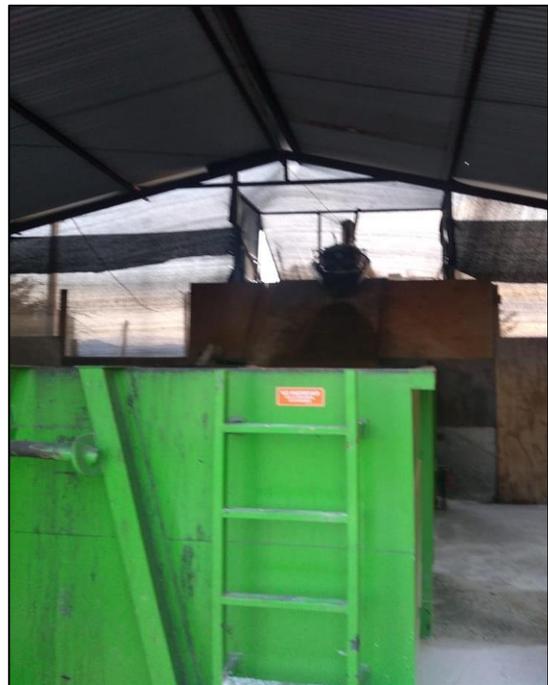
- **According to the authorities' report dated January 11<sup>th</sup>, the visit identified excessive nuisances due to odor from the farm, the management of garbage, systems for disposal, and the excessive dispersion of vectors such as flies, leading to stress, nausea, headache, and even skin infection in children provoked by the flies. Confirm whether there is a probable causality between COEXCA's operations and the aforementioned nuisances.**
- **Also, this has later been contested. The review should clarify what the conclusions above were based on, and if they have any bearing to the farm.**

As discussed above, our opinion is that a causal relationship between the nuisances reported and the Farm's operation might have taken place, but concrete and sufficient measures to repair this were taken, due to the intervention of administrative and judicial authorities, especially:

- Elimination of ditches and Reefer installation:



- Improvement of the reception system of the solid part of the slurry in a container, instead of its disposal on the ground, which was also covered with mesh to avoid vector production. The homogenizer well was also covered.





Moreover, ACSA has informed us that they have executed the following measures, upon the requirements of the Regional Ministerial Secretary of Health:

- Purchase, installation, and operation of a higher efficiency press for liquid/solid separation of the slurry treatment system.
- Odor Impact Assessments containing odor measurements and modellings with said results for 24 hours, 365 days a year, taking into account the meteorology and geography of the modelled zone.
- Entomological study conducted by an expert entomologist, that determined the low probability of fly migration from the Farm to the nearby community.
- Meetings with the community and the local city hall, where weekly round tables with the three parties were agreed upon. Three progress meetings took place (January 6<sup>th</sup>, 10<sup>th</sup> and 17<sup>th</sup>, 2022), but the community decided not to pursue them. Some of the agreements consisted in delivering liquid for vector control, and



technical consultancy to carry out house fumigations with the recommended product (Agita 10wg). The Municipality conducted applications during the weekend, and the third one was to be conducted by the company, but the community decided to end this table and proceed with legal actions.

- Two detection sensors for Odorant Gases were installed in both productive sectors (H<sub>2</sub>S, NH<sub>3</sub> and COVs sensors on Site 1 and on Sites 2 and 3), and equivalent sensors were installed in a neighbor's house.
- As a reduction and odor control measure, capsules were installed on the presses that separate the solid part of the slurry on Sites 1 and 2-3, along with the application of a chemical product (called "Just a Drop") to reduce odor production from the source (homogenizer cone). The encapsulation of the slurry treatment units allows an effective seal of cones and homogenizer ponds with plastic, mesh and/or geomembrane.
- ACSA applies an industrial odor neutralizer weekly ("Just a Drop"), to reduce odors on the Farm's premises and on its recipients. Odor control products act eliminating odorous substances, disguising them with fruity and/or floral fragrances.
- An odor control procedure was deployed, aimed at developing an odor control plan on the different Farm units and the environmental handling units, reducing odor emissions.
- Application of the Integral Plague Management Program, through a procedure guide that describes all the activities that are carried out by a specialized pest-control company (fumigation, disinfection, pest control).
- Application of Bioactive Components to the slurry treatment, through the addition of "Vitabion RILes", a commercial biodegrader containing a consortium of non-pathogenic aerobic bacteria that produce protease, amylase and lipase enzymes that cause an effective degradation of the complex compounds contained in different industrial waste liquids. It is a non-toxic, non-carcinogenic, non-mutagenic and non-teratogenic product. It is also biodegradable and that does not bio-accumulate.
- Compliance with PABCO guidelines (SAG): the Evaluation Guidelines for Bovine Farm Official Certification (PABCO) from SAG contains 59 requirements from the PABCO Bovine Program. They are classified in Critical (10), Higher (24), and Lower

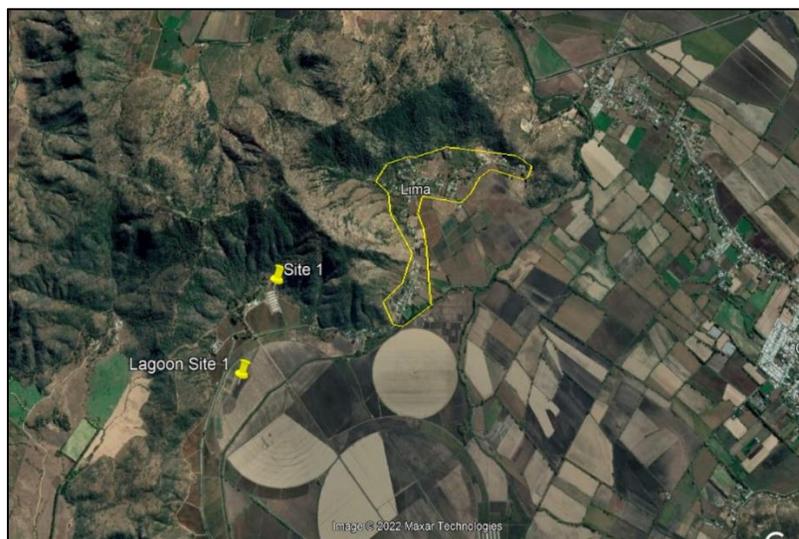
(25). The Santa Francisca Pig Farm assessed the compliance of the PABCO guideline requirements through a SAG-authorized evaluator.

- **The review should look into the complaints from the neighbors, and present an assessment of their magnitude and bearing.**
- **According to the authorities' report dated January 11<sup>th</sup>, the visit identified excessive nuisances due to odor from the farm, the handling of garbage, processes for disposal, and the excessive dispersion of vectors such as flies, leading to stress, nausea, headache, and even skin infection in children provoked by the flies. Confirm whether there is a probable causality between COEXCA's operations and the aforementioned nuisances.**

We have not been able to review the complaints presented to the authorities, given that they are subject to non-disclosure. However, regarding the information contained in the deeds of the Health Authority, the SAG, and the appeals for protection and their reports, the situation regarding odors and vectors in January 2020 seemed to be effective at the time in the "Lima" sector.

However, there is still doubt whether such odors and vectors were solely produced by ACSA, given that the Lima and La Candelaria localities, home to the neighbors that issued the complaints, are both located in a rural area where several agricultural and industrial activities that may also produce odors and vectors.

All in all, the situation was overcome, based on the measures adopted by the Company at the time, and the presence of odors and vectors was not verified during our visit.



Source: Own production based on Google Earth



Regarding the alleged disposal directly to the Lima and Zapata streams, there is no account for information regarding the effectiveness of said statement.

Finally, please note that there is no certainty that the waterproofed ponds are not infiltrating into the phreatic water table.

**b. LEGAL ISSUES**

- **A short description of the health authorities in Chile, with focus on their responsibilities and authorization to inspect and act, including an explanation on the powers delegated to the local, regional, and national branches.**

The applicable regulation regarding Pig Farms and their authorities in Chile can be found in different laws, regulations and guidelines.

Article 10 of the Environmental Framework Law N° 19,300 regulates a list of projects that have to be submitted to the Environmental Impact Assessment System ("EIAS"), and obtain a favorable Environmental Permit, before its execution. Therefore, the EIAS is a pre-emptive instrument for environmental assessment of projects, that allows the different authorities who participate, to determine if a project complies with the existent environmental laws, and is capable of either discarding or compensating, repairing or mitigate its potentially significant environmental impacts.

The EIAS is run by the Environmental Assessment Agency ("EAA"), which leads the environmental assessment process, culminating in an administrative resolution that approves or annuls the project environmentally, titled environmental permit and/or Environmental Qualification Resolution ("EQR" or "RCA" for its name in spanish).

Article 3 from the Bylaws of the Environmental Law, sets thresholds for each project type regulated in Article 10 mentioned above, stating that the projects or activities that may cause an environmental impact on any of its stages, and must be subject to EIAS, are amongst others, the following:

*l.3) Farms and stables for aging, dairy and/or animal fattening, where they may be confined in yards and fed for more than a consecutive month, containing an amount equal or greater to:*

*- l.3.3) Three thousand (3,000) pigs weighing less than twenty-five (25) kgs., or seven hundred and fifty (750) pigs weighing more than twenty-five (25) kgs.*



*o.7) Treatment and/or disposal systems of liquid industrial waste, that meet at least one of the following conditions:*

*- o.7.2) Their effluents are used for the irrigation, infiltration, spraying, and moistening of roads or fields.*

Since the EIAS started operating in Chile in 1997, there are currently projects that are preexistent, such as the Farm. In this case, Law N° 19.300 and its Bylaws demand that said projects are submitted to an environmental assessment only when and if they suffer any “considerable modification”, which is a concept also defined in said Regulations.

Please note that compliance with emission standards is one of the subjects analyzed in the context of the EIAS. However, in January 2022, the review of procedures that allowed the issuing of Decree N° 9, dated January 1<sup>st</sup>, 2022, which “Sets Emission Standards for Pollutants in Pig Farms that Produce Nuisances and Present a Risk to the Quality of Life of the Population, due to their Odors” finished, and is currently being reviewed by the State’s Office of the Comptroller General: a government agency that must approve it before being published in the Official Gazette, to enter into force. Since this has not yet taken place, the Regulations set emission limits contained in regulations of international standards, for the projects that enter EIAS.

On the other hand, the SAG is one of the State Administration Bodies with Environmental Jurisdiction that takes part in the EIAS, reviewing projects that are within its scope of competence. In this context, SAG has issued several guidelines to unify the applicable evaluation criteria, among which is the “Environmental Assessment Guideline for the Application of Effluents to the Ground G-PR-GA-001”.

Clause 6.1 et. seq. from the Guidelines requires Pig Farms to present a Slurry Application Plan that must contain, in summary: (i) a description of the general project, (ii) a description of the treatment system and its components, (iii) ground, weather, and waste characterization, (iv) nitrogen balance, (v) water balance, (vi) sectors and application types, (vii) control and contingency management measures, among others.

Once an EQR is granted, the entity that oversees its compliance is the SMA, which must ensure that those projects counting with a favorable EQR, comply with its conditions and requirements, and that those operational projects that may be developing activities that must count with an EQR, enter into the EIAS to obtain it. To do so, the SMA Organic Law grants it the authority to investigate, audit and penalize, and to apply fines, and measures such as stoppage of operations and even shutdowns if necessary.



As described above, the Farm is a project pre-existent to the EIAS, which only recently obtained its first EQR N° 9, 2020, regarding a project which aims to implement an expansion of the facilities amongst other changes that are not yet in execution, as informed by ACSA. Among these changes are: (i) integration of anaerobic biodigesters into the slurry treatment system; (ii) installation of Reefer container; (iii) construction of new storage lagoon; and (iv) heating and ventilation adjustment in pavilions.

Even though ACSA is aware that it has not begun the enforcement of EQR N° 9/2020, some changes were verified, such as a Reefer installation and the construction of two new lagoons, among others, which require an assessment to determine if they correspond to a “considerable modification” of the original project that requires compulsory environmental assessment. The latter is necessary to prevent the SMA from determining there is a potential hypothesis of elution of submission to the EIAS. In such case, the authority may force the Company to submit those changes to environmental assessment and/or initiate a sanction process.

Also, one of the main regulations concerning the activities of the Farm is the Health Code, whose article 1 states that the rules contained herein are applicable to all matters related with the promotion, protection, and recovery of the health of the inhabitants of the Republic, excluding those contained in other regulations.

Said Code describes the different public offices and services that may act as “Health Authorities”, and determines the scope of their authority, including the Ministry of Health, the Regional Ministerial Secretaries of Health, the Director of the Public Health Institute (ISP), among others.

The Regional Ministerial Secretaries of Health are the representatives of the Ministry of Health at a regional level, and they act in a decentralized manner: the law grants them authority to issue health permits regarding certain activities or projects that require them, as well as to inspect, audit and enforce said regulations.

The following are among the rules that they are authorized to oversee:

- (i) Decree N° 144 issued by the Ministry of Health in 1961, that determines the Rules to Avoid Discharges or Atmospheric Pollutants of Any Nature, ordering in its article 1<sup>st</sup> that “*Gases, vapors, smoke, dust, discharges, or any kind of pollutants*”



*produced by any industrial facility or workplace must be captured or eliminated so as to not cause danger, harm or nuisances to the neighborhood”.*

- (ii) Decree N° 594 issued by the Ministry of Health in 1999, titled Regulations on Basic Health and Environmental Conditions at Work Places, which states in its article 3<sup>rd</sup> that: *“All companies are forced to maintain the health and environmental conditions necessary to protect the life and health of their workers, being them directly dependent of them or third-party contractors that carry out work for them”*; and states in its article 37 section 1 that *“Any potential risks that might affect the physical integrity or health of workers must be removed”*.

Articles 161 et. seq. of the Health Code grant power to the Health Authority to demand the enforcement of health regulations through an administrative sanctioning process known as health proceeding (or *“sumario sanitario”* in spanish).

This proceeding can be initiated ex officio by the Regional Ministerial Secretary of Health or through a third-party complaint, and it generally starts with the on-site visit of the official or public servant from that agency where the potential health violation is taking place, to conduct the corresponding inspection, and issue a record or Act that states the facts witnessed and the regulations eventually breached.

As set forth in article 178 of the Health Code:

*“The authority can also order shutdown; prohibition to operate houses, premises or establishments; work stoppage; seizure; destruction and denaturalization of products.*

*These measures can be applied by a certifying officer by virtue only of the issuance of the act, when there is an impending risk to health, which must be immediately informed to its direct authority. A copy of said act must be delivered to the interested party”.*

The aforementioned rule enables the public officer conducting the inspection to apply the measure of prohibition of operation or shutdown (closing) of the facilities when there is an immanent or *“impending risk to the health of the population”*, and is forced to inform this to its hierarchical superior so that it confirms or annuls the decision, as applicable, through the issuance of a formal administrative act (also called an *“exempt resolution”*).

In the same act drafted by the officer, whether a measure is adopted or not, a term will be granted to present discharges (defense) if any potential infringement is observed, and in



such case the alleged offender must provide all the evidence at hand to discredit the accusation set forth by the officer.

If the aforementioned takes place, the Regional Ministerial Secretary of Health will analyze the evidence, and based on the information provided in the case, will issue a resolution of termination of the health proceeding, that may consist in a warning, the imposition of fines, or even the total or partial closing of the premises or facilities.

An administrative appeal for reconsideration can be set into motion before the Regional Ministerial Secretary of Health. In case such decision is not favorable, a judicial claim can be submitted against the new decision of the Regional Ministerial Secretary of Health. This new judicial process is initiated before a civil judge of first instance, and its sentence can be appealed before the competent Court of Appeals. The ruling on the second level of approval can be contested before the Supreme Court of Justice through an appeal for cassation, as a final judgment by a court of last resort

Finally, Law N° 18,755 provides Rules on the Agricultural and Livestock Service, and states in its articles 1<sup>st</sup> and 2<sup>nd</sup> that SAG is a public decentralized body, with legal personality and own assets, that aims at contributing to the farming development of the country through the protection, maintenance and enhancement of animal and vegetable health; the protection and conservation of renewable natural resources that have an impact on the country's livestock production; and the control of raw materials and agriculture and farming products, subject to its rules and regulations.

Decree Law N° 3,557 from 1980, that Sets Regulations on Agricultural Protection, states on its article 1<sup>st</sup> that SAG will be responsible for applying all the requirements contained therein, and states on its article 11 that *“Industrial, mining, and any other facilities that handle products capable of polluting agriculture, must adopt all technical and practical measures available to avoid pollution at the appropriate time”*.

SAG also counts with the legal authority to inspect and demand the compliance of the laws within its scope of action.



- **The authorization and principles for Chilean courts to handle and rule on complaints, injunctions, etc. regarding conditions involving the Santa Francisca farm.**

There are several ways for interested parties to appeal before Chilean courts of justice, to demand for their rights to be upheld. The Chilean Constitution, for instance, provides the possibility of resorting to the Court of Appeals to appeal for legal protection when any person, or even a third person acting as a representative of another, suffers deprivation, defect or threat of fundamental rights, among which are: the right to physical and psychological integrity, equality before the law, the right to live in a non-polluted environment, the right to private property, among others.

A 30-day consecutive term starting when the harmful act occurs, is granted to submit the pleading containing a detailed statement of facts and the applicable law. This appeal grants the possibility of requesting a precautionary measure to the Court of Appeals known as “Temporary Injunction Against Further Process” (or “orden de no innovar” in Spanish), which enables said Court to issue any instruction aimed at terminating the effects of the act that is being appealed, for example, the shutdown of a commercial activity.

Notwithstanding the foregoing, within the scope of this constitutional action, the Court of Appeals will request a report to all entities involved in the harmful situation, under penalty of ruling without taking them into consideration if they do not respond. The ruling of the Court of Appeals can be appealed, and the latter will be heard by the Supreme Court as a reviewer, passing judgment that cannot be subject to further claim.

On the other hand, when an EQR is granted to any given Company, it can also be subject of a subsequent claim by an interested third party, which can be substantiated either on the fact that their allegation and inquiries presented during the public participation stage were not duly taken into account in the EQR, or on the fact that the content of the environmental permit is illegal, requesting its annulment to the Public Administration.

In said cases, the administrative decision of the environmental authority can be appealed before Environmental Courts. The process will be entered into with a written submission containing the complaint, and the Environmental Court will request the intervening State bodies to issue a report. It will later decree the hearing of the case (public hearing), and the allegations of the parties. Finally, the ruling issued by the Environmental Court is subject to an appeal for cassation before the Supreme Court.



Finally, a claim appeal titled public law annulment action (“*acción de nulidad de derecho publico*” in Spanish) can be set forth against any authorization issued by the State (such as an EQR), which implies the request for annulment of the act containing alleged legal defects. An ordinary proceeding of broad coverage is set forth, which will imply filing a lawsuit, and the subsequent stages of defense, surrebuttal and counter-surrebuttal. Subsequently, an evidentiary stage will take place, and the Civil Judge will pass judgment at its conclusion. An appeal and an appeal for cassation can be presented before the Court of Appeals, and against this judgment an appeal for reversal can be presented before the Supreme Court, as a last instance.

- **The Danwatch article claims that a production ban on COEXCA has been issued. This has been contested by COEXCA, informing IFU that only a ban on continuing the processes if the two injunctions were not handled, was issued. According to COEXCA, these injunctions were handled within the time limit and the farm was therefore never under a production ban. The review should clarify if a total production ban was issued by the authorities/court or not.**

As was noted before, when the Health Authority receives complaints, a public officer visits the scene to evaluate the situation. If a potential health risk to the population is determined, the authority may decree the prohibition to operate or the shutdown of the facility, depending on the gravity of the confirmed facts. This decision must be ratified afterwards.

Regarding the Farm, the Regional Ministerial Secretary of Health issued a prohibition to operate or production ban on a first visit, in the opinion that the irregular management of mortalities and the amount of odor and vectors implied an imminent risk for the health of the nearby population. The decision was then ratified by the Regional Ministerial Secretary of Health.

On a subsequent visit 8 days later, the officer conducting the inspection saw that there were no improvements on the overall situation, and mandated the company’s closure. But said decision was nullified as of the day after, since the authority deemed that it should not be confirmed, given that the actions necessary to solve the irregularities were in progress. This is why only the production ban was maintained, which was in force up to March 10<sup>th</sup>, 2022, when the exempt resolution to end the first sanctioning procedure was issued, and the measure was raised.

Regarding the appeals for protection, that is being processed under N° 219-2022 also provided a similar measure titled “Temporary Injunction Against Further Process”. In this



case, the Court of Appeals accepted the injunction on February 8<sup>th</sup>, 2022, and decreed: *“the shutdown of the reproductive works of the aforementioned pig farm, which does not prevent the appealed company from adopting the measures aimed at mitigating the health emergency accounted by the appeal”*.

On April 7<sup>th</sup>, 2022, ACSA requested the uprising of the injunction decreed by the Court of Appeals, based on new evidence provided at the time. Therefore, such measure was raised on April 21<sup>st</sup>, 2022.

For the above reason, no administrative or judicial ban or prohibition to operate existed and/or was in force while preparing this report.

- **The Danwatch article also claims that a state of health emergency (“orden de no innovar” og “suspension de funcionamiento”) for the neighbouring city has been introduced, based on the first findings from the authorities. COEXCA has informed IFU that this is not the case. The review should clarify if such a state of health emergency has been introduced by the authorities or the court.**

The Danwatch article states as follows:

*Contamination of food by coliforms, huge amounts of flies and the stench of dead pig carcasses rotting in the sun. At three different locations in Chile, a partly Danish-owned pig business is involved in legal proceedings, due to a number of violations of health and environmental laws. Most recently, a state of health emergency has been declared in the town where one of the pig farms is located.*

This is not effective. As it was stated before, the *“impending risk to the health of the nearby population”* and or *“the imminent risk to the health of the surrounding population”* is not an alert issued by the Health Authority, it is the reason or grounds required by the Health Code in order to adopt the measure of *“ban”* or *“prohibition to operate”*.

Therefore, even at time when there was an injunction in force against the Farm, there was never a sanitary alert regarding the health of the population.

- **The review should include a short summary of the current status of the ongoing court cases, as well as the present status of the authorities’ evaluation of the Santa Francisca farm.**

As it was detailed in the previous chapters, administrative auditing processes were initiated by SMA, SAG, and the Regional Ministerial Secretary of Health, regarding the alleged facts,



and only the latter initiated sanctioning proceedings. In this regard, one is already terminated, with a pending appeal for reversal, and the other is in process.

On the other hand, two judicial proceedings were initiated through appeals for legal protection that were accumulated, which have not been ruled to date, with only the judgment pending.

#### IV. CONCLUSIONS

In light of the above, we may conclude that the following:

- Complaints were issued against the Farm due to irregularities in its operation in January, 2022. Indeed, (i) mortalities were placed in non-waterproof ditches, without further treatment; (ii) the slurry was being inefficiently treated, leaving the solid part that was applied to the Santa Francisca Farm moist; and (iii) the products applied for vector and odors mitigation were insufficient, producing a series of complaints from the nearby community due to the odor and vectors. The fact that it is hotter in Chile in January (Summertime), is also connected to the latter.
- There are several ongoing administrative and judicial procedures against ACSA, who has taken a series of measures that have improved the Farm considerably, and have been verified on site, such as: (i) Closing of the ditches for mortalities, replacing them with a Reefer that keeps them frozen at -20°C, until they are dispatched to an authorized site for final disposal outside the fields, owned by third parties that count with health permits, approximately every 15 days; (ii) improvements in the slurry treatment system such as: (a) covering of the separators and homogenizer wells, (b) application of higher quality products to the effluent, such as larvicides and odor mitigators, (c) temporary inclusion of a container that receives the solid part of the slurry, which is also dispatched to a final disposal site approximately every 15 days; (d) construction of two lagoons of 9.000 m<sup>3</sup> that will be sealed on their top and bottom parts, and will count with a gas chimney containing a carbon activated filter that allows odor control. They are expected to replace the current 1.000 m<sup>3</sup> lagoons at Sites 2 and 3 as of July 2022; and (e) studies and monitoring of vectors and odors, that account for not exceeding parameters.
- Notwithstanding the foregoing, we have noted two issues that we believe must be known by IFU:



- The accumulation lagoon on site 1 (5,000 m<sup>3</sup>) and the channel that carries the effluent to it are not waterproofed on its base, nor covered on its upper part. The latter does not allow us to ascertain that the accumulated effluent is not infiltrating into the phreatic water table located in the site, with the consequences that may eventually arise from this (pollution of groundwater for example). Although, ACSA has informed us that a project for covering the lagoon of Site 1 and the channel that drives the slurry to is currently in motion. The execution of these improvements is programmed for September 2022.
- ACSA has pointed out on several occasions that EQR N° 9, 2020, has not entered into force yet. However, the installation of Reefer containers, the dispatch of the solid part of the slurry and dead pigs to third parties for final disposal, the construction of 2 new accumulation lagoons and the coverage of the lagoon on Site 1 and its channel, do not receive confirmation yet from the environmental authority (SMA) as to whether they required a previous environmental assessment or not. Anyhow, ACSA has informed that by the end of July 2022, the Company will submit a pertinence query to the SEA to regularize the changes made in this regard.
- Finally, it is our opinion that the Farm is currently carrying out a regular standard operation for this kind of business, and intends to continue improving its processes, therefore, we believe that the administrative, judicial and political authorities should not order its closure, notwithstanding that they should continue inspecting so that the improvements are executed in the future.



# Report Santa Francisca

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*Environmental Assessment:  
Review of environmental conditions at SANTA Francisca  
farm (part of Coexca), Chile*

IFU

Date: 30 June 2022

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## 1. Introduction

IFU has requested NIRAS A/S to inspect the Santa Francisca farm in order to clarify the farm's external environmental impact and make an assessment of whether the farm meets EU standards.

The farm is located in the region of Maule, Chile 3-4 km southwest of the town of Chépica. The farm is divided into two sections (site I and site II/III), coordinates site I: 34°43'31.04"S, 71°19'58.20"V. Coordinates site II/III: 34°44'36.90"S, 71°18'41.38"V. The farm is in full operation and is operated with an animal husbandry of 1,250 sows with fattening of about 40,000 piglets/slaughter pigs (115 kg) pr. year from these, corresponding to about 1,500 DE. 1 DE corresponds to 100 kg nitrogen originating from faeces and urine from livestock. Sows and piglets are on site I, while piglets and slaughter pigs are on site II/III (6.1-115 kg). 40,000 produced piglets/slaughter pigs (115 kg) pr. year corresponds to approximately 20,000 animals in the stables.

The farm was inspected on 1 July 2022 by Peter Nygaard, NIRAS A/S, where representatives from the farm also participated.

## 2. Handling of dead pigs and the solid part of the slurry

### Question:

- *The status on the two injunctions regarding the handling of dead pigs and the solid part of the slurry. Are these cases closed? What did Coexca do to close these cases? And if not, why not?*

### Review:

Both cases are closed.

The dead pigs were previously buried. This has been changed from January 2022 and consequently they are now stored for up to two weeks in a refrigerated container and then transported to the destruction facility "Transportes Get". All buried pigs have been dug up and destroyed.

*Image 2.A: The location before*



*Image 2.B: The location now*



Since January 2022, the solid part of the slurry has not been applied to the properties fields. Instead, it is transported to the compost companies "Eco Maule" (0.5 hour transport) and "J Compostage" (1.5 hour transport), which compost and redistribute it for various fertilization purposes. At the inspection by the authorities on 11 January 2022, it was found that the press of the slurry separation plant did not fully fulfilits function, as the sludge had a dry matter content of less than 20 %. This issue has now been put in order, so that the dry matter content is estimated by the authorities to be 35-50%.

One container is produced every 14 days from each site, i.e. a total of one container/per week from the entire farm.

There are 2 slurry separation plants on the property - on site I and site II/III, respectively:

*Image 2.C: Site I*



*Image 2.D: Site II/III*



### 3. Handling and storage of slurry

Question:

- *An evaluation of the implementation of both national and EU-regulation standards for the handling of slurry. This should as a minimum include:  
The current storage capacity and the transportation of slurry from the stables to storage, the separation of solid and wet slurry, the transportation from storage to the field, and methods of applying the slurry to the fields.*

Review:

There are currently 5 slurry lagoons on the property. All lagoons are without solid bottom and cover. The slurry is directed to lagoon 1 in open ditch without solid bottom and to lagoon 2-5 in open cement pipe (above ground level).

- **Lagoon 1 at site I:** 5,000 m<sup>3</sup>, without solid bottom and cover, is still desired to be used. It has been confirmed by the farm owners by e-mail that In September 2022, Lagune 1 will be established with a solid bottom and cover to established in the same way as the other lagoons on the farm.
- **Lagoon 2 at site II/III:** 1,000 m<sup>3</sup>, without solid bottom and cover, will be closed down in July 2022.
- **Lagoon 3 at site II/III:** 1,000 m<sup>3</sup>, without solid bottom and cover, will be closed down in July 2022.
- **Lagoon 4 at site II/III:** 9,000 m<sup>3</sup>, established with solid bottom and cover, under construction, will be put into service in July 2022.
- **Lagoon 5 at site II/III:** 9,000 m<sup>3</sup>, established with solid bottom and cover, under construction, will be put into service in July 2022.

#### 3.1 Lagoon 1 at site I: 5,000 m<sup>3</sup>

Image 3.A: Connection to lagoon 1



Image 3.B: Lagoon 1



### 3.2 Lagoon II/III: 1,250 m<sup>3</sup> + 1,250 m<sup>3</sup> (and future Lagoon 4 and 5 of 9,000 m<sup>3</sup> + 9,000 m<sup>3</sup>) at site II/III:

Image 3.C: Connection to lagoon 2-5



Image 3.D: Preparation for burying closed pump line for transporting manure to lagoon 2-5



Image 3.E: Lagoon 2 and 3 (will be closed down)



### 3.3 Lagoon 4 and 5 at site II/III: 9,000 m<sup>3</sup> + 9,000 m<sup>3</sup> (under establishment)

Image 3.F: Establishment of lagoon 4-5



It is stated that all slurry pipes will be changed to buried, closed pump lines by July 2022. This also applies to slurry lines/pipes at the slurry separation plants.

### 3.4 Partial conclusion: Slurry handling and storage

- When all slurry transports have been converted to buried, closed pump pipelines, EU standards for this are met.
- Lagoons 2 and 3 will be dismantled and replaced with lagoons 4 and 5 which will be established with a solid bottom and cover in accordance with EU standards.

- Lagoon 1 is still to be used. However, it is not established according to EU standards, as it has no solid bottom and cover. In order to continue using lagoon 1, it must therefore be modified with a solid bottom and cover in order to meet EU standards.
- The total capacity of lagoons 1, 4 and 5 is 23,000 m<sup>3</sup>. This corresponds to 9 months of storage capacity at the current animal husbandry of 1,250 sows full line and thus complies with EU standards.
- If the planned expansion of doubling the livestock to a total of 2,500 sows is to be full line completed, an additional 23,000 m<sup>3</sup> storage capacity must be established to meet the EU standard for 9 months of storage capacity for pig farms.

## 4. Application of slurry and nitrogen utilization

### Question:

- *The type of crops the slurry is applied to and the size (in hectares) of the fields where the slurry is applied, including annual plans for applying (how much how often? How many days of the year?).*

### Review:

Annual plant and fertilizer accounts are drawn up and presented for the authorities. The company has forwarded the latest accounts.

The slurry is applied by sprinkling in the immediate area around the farm on 93 ha of corn and wheat which is used as animal feed. The soil is suitable as arable land with good opportunities for the production of animal feed or plants/fruit for human consumption. The area is low-lying and has good access to water resources.

Approximately 11.8 DE/ha is applied to the application areas, corresponding to 960 kg N/ha/year. EU rules allow a maximum of 1.7 DE/ha, corresponding to 170 kg N/year, but 204 kg N/ha/year for application of only wet fraction after slurry separation, which is the case at Santa Francisca. Nitrogen application at Santa Francisca is still calculated to be higher than what EU standards.

*Image 4.A: Manure application technique*



### 4.1 **Partial conclusion: Application and utilisation of manure**

- The local authorities are presented annually with the farm's plant and fertilizer accounts. Despite this the amount of livestock manure applied to agricultural land is immediately assessed highly compared to EU standards. Therefore the utilisation of the manure's nutrients should be further investigated. This requires closer examination by a person with thorough knowledge of plant breeding in Chile.

## 5. Assessment of management and utilization of manure in proportion to EU standards

- *A conclusion on whether the current methods are compliant with EU-regulations, and if not, the plans for future compliance including requirements for the planned increase to 2,500 sows.*

### Review:

For 2,500 sows full line, storage capacity must be doubled and the area of distribution increased significantly compared to the current ones in order to comply with EU standards (see above in relation to plant and fertiliser accounting according to local regulations). If the animal husbandry is increased, new assessments of the farm's overall environmental impact must be made.

## 6. Assessment of the level of coli bacteria in streams

### Question 1:

- *Please explain the coli bacteria reports from the authorities and the following samples. The report from the authorities states that the level was 92 times above standard, but this is contested by a later report. Please describe the full background for taking the coli samples and the purpose of these samples and explain which standards the authorities are referring to. What is the process outcome following the samples and the results?*

### Review:

The samples have been taken by the local authorities to detect any surface runoff of slurry into the streams.

Sample 1 was taken in slurry lagoon 1 and shows a coli content of 92,000 coliform bacteria/100 ml of water. The other 4 samples were taken in the local streams and show a content of between 93 and 700 coliform bacteria/100 ml of water. The locations have been inspected.

The limit value has been set by the authorities at 1,000 coliform bacteria/100 ml of water.

There is no tradition in Denmark to analyse for coliform bacteria in surface water, unless the water is used as bathing water. This is because coliform bacteria in themselves do not pose a danger to e.g. fish death or other impact on the environment, but may pose a health risk to humans through direct contact or ingestion of the water. Only in rare cases is a combination of the presence of coliform bacteria and DNA analyses of bacteria in water from watercourses used to trace sources for contamination of coastal bathing water.

### **Partial conclusion: Coliform bacteria/surface runoff of slurry to streams**

No exceedances of coliform bacteria have been found in the stream stations as all samples taken here show a content of less than 1,000 coliform bacteria/100 ml of water. Only the sample taken in the slurry lagoon exceeds the limit value, which is to be expected, and the sample taken here must be considered a reference sample.

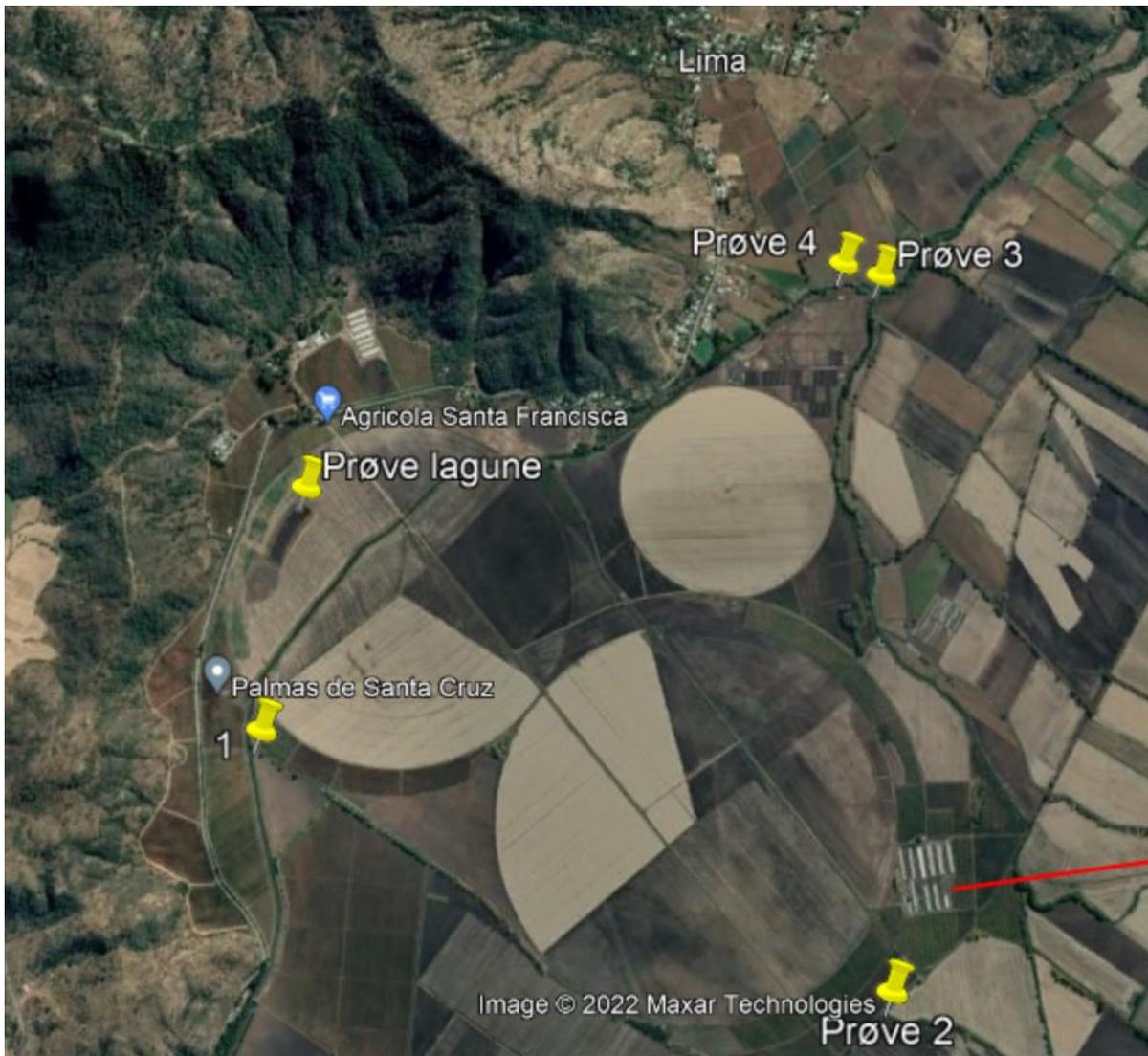
For comparison with the current analyses from the stream water at Santa Francisca, it can be mentioned that the EU Bathing Water Directive's limit value for E coli for good bathing water quality for inland waters is 1000 E coli / 100 ml bathing water. The current values for coli bacteria extracted in the streams at Santa Francisca are all below 1000 pcs / 100 ml, and thus below the limit value for good bathing water quality for inland waters (EU).

### Question 2:

- *The review should clarify the likelihood/possibility of any contamination to the streams from the farm. What is the stream water used for upstream/downstream? Are there other possible sources of coli bacteria contamination nearby? Additionally, what mid- and long-term impacts are likely from high coli bacteria level on the local environment and to communities?*

The water of the two streams flows from south to north. The villages of Los Pocilos and Rinconada de Jauregui are located approx. 5 km upstream of the eastern stream, and will, by discharging domestic wastewater, contribute to the content of coliform bacteria in the stream. The authorities base their work on a maximum limit value of 1,000 coli/100

ml. It is uncertain whether this limit value is generally applicable to the streams, as it only applies to irrigation water intended for fruit and vegetable farming developed at ground level, which is usually consumed in their raw state. In any case, no values exceeding 1,000 coli/100 ml have been found in the stream stations at the property's application areas, and thus it has not been found relevant to carry out a more thorough underwater survey of other potential sources of pollution upstream of the farm.



### Question 3

- *The article from Danwatch is mentioning that the second visit on 19 January included samples from the water channels and treated wastewater that are used to water neighbouring fields where corn, plums and pineapples are grown. This is contested by Coexca. The review needs to clarify where the samples was taken, and if any wastewater or other liquids handled by Coexca is used for watering neighbouring fields. The review should also determine, if said crops are grown in fields around the farm, especially pineapples.*

Review:

It is stated by the farm's operations manager (Caesar) that slurry is applied to the crops corn and wheat, which are used for animal feed. According to EU standards there is no ban on applying manure from animal husbandry on directly perishable crops such as fruit, berries, peas, etc., which for one thing organic food production is dependent on in relation to nitrogen sources. In the EU, there is, however, a ban against applying faecal waste water on directly perishable crops, which is, however, not practiced on the farm.

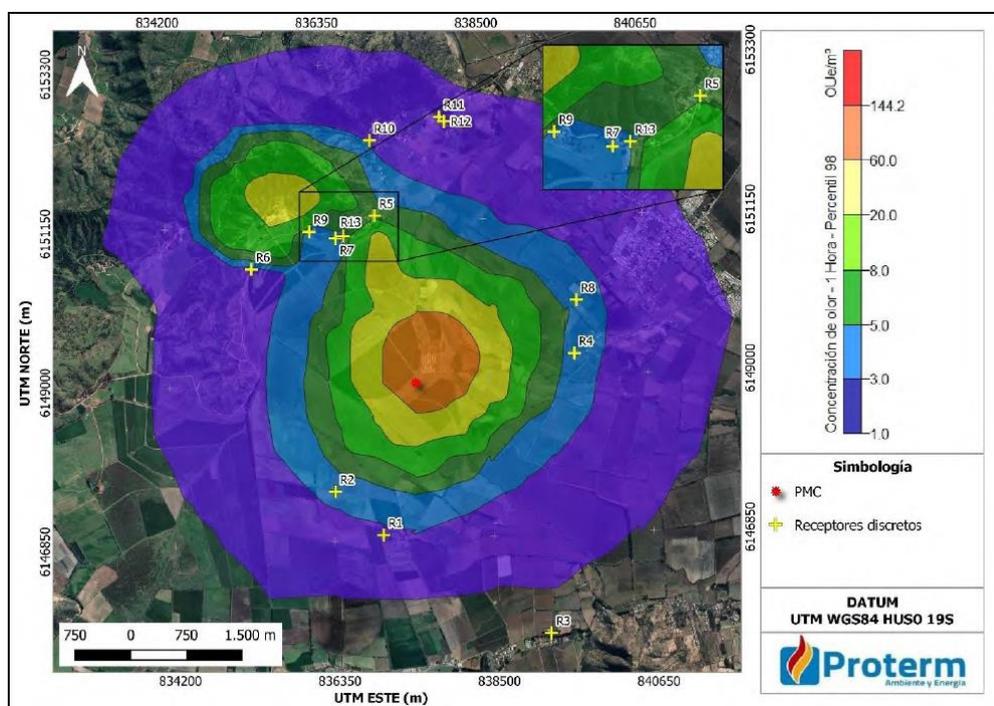
## 7. Odour and fly nuisances

Question 1:

- *According to the authorities' report from 11 January, the visit identified excessive nuisances due to odour from the farm, the handling of garbage and processes for disposals and excessive dispersion of vectors like flies leading to stress, nausea, headache and even skin infection in children due to the flies. Confirm whether there is a provable causality between Coexca's operations and the above nuisances.*
- *Also, this has later been contested. The review should clarify what the above conclusions was based on and if they have any bearing to the farm.*

Review:

It has by the Chilean company Proterm (www.proterm.cl) been calculated (04 de marzo de 2022 - Inf02E01.O-22-021) that the farm's odour emission at the nearest urban area is less than 3 Ou/m<sup>3</sup> and a few of the nearest settlements 5-20 Ou/m<sup>3</sup>.



In comparison, the limit value for urban zones in the Danish Livestock Act is 5 Ou/m<sup>3</sup> at urban areas, 7 Ou/m<sup>3</sup> at smaller villages and 15 Ou/m<sup>3</sup> at settlements in the countryside. In a previous report, NIRAS A/S (report date 14-09-2016) has estimated the same values of odour from the farm in the area.

### **Partial conclusion: Odour and flies**

In relation to DK (EU) standards, residential areas in the area will not be significantly affected by odour nuisance on the farm. If the animal husbandry is expanded, the odour nuisance from the farm will increase, and the odours from the farm should be re-assessed.

Flies from livestock farms are propagated primarily in solid manure which is not removed or covered for a period of more than 3-4 weeks. As the solid part of the slurry is stored in a container and transported away from the property every 14 days, this activity will not contribute to significant fly nuisances. Since the solid part of the slurry is no longer applied on the property's land, but transported to an external composting company, the application of manure will also not contribute to fly nuisances in the area. However, the non-covered Lagoon 1 is very likely to be the propagation site for a significant number of flies. This is due to the fact that on parts of the slurry surface and on the sides of the lagoon, solid fractions are formed, which will be a potential site for propagation of flies. This is illustrated in image 5. As it is stated by the farm that Lagoon 1 will be established with solid bottom and cover in September 2022, the problems with the propagation of flies in Lagoon 1 are expected to be solved.

*Image 5: Lagoon 1. Possible propagation place for flies.*



## 8. Summary of conclusions

### Sub-elements which are not assessed satisfactorily:

- Slurry storage: Lagoon 1 must be established with a solid bottom and cover. The farm has informed that this will take place in September 2022.
- Fly nuisances: The open lagoon 1 is estimated to be a potential propagation site for a significant number of flies. When the lagoon is covered, the problem probably will be solved.

### Sub-elements that require attention:

- The amount of livestock manure applied to agricultural land is calculated highly compared to EU standards and the utilisation of the manure's nutrients should be further investigated. This requires closer examination by a person with thorough knowledge of plant breeding in Chile.
- Expansion of animal husbandry: If the animal husbandry is increased, new assessments of the farm's overall environmental impact must be made.

### Sub-elements which are assessed satisfactorily:

- Dead pigs: Since January 2022, storage of dead pigs has changed from burial to storage in refrigerated container and subsequent destruction by an external company.
- Solid part of separated slurry: Since January 2022, the practice has changed so that the solid part of the slurry is collected in a container and transported to a composting enterprise, which redistributes the solid part of the slurry for fertilisation purposes.
- Transport of slurry to storage facilities: From July 2022, all liquid part of the slurry is lead to storage facilities via sealed, closed and buried pump lines.
- Liquid part of the slurry capacity: From July 2022, the capacity will be 23,000 m<sup>3</sup>, which corresponds to 9 months of storage capacity. However, Lagoon 1 must have a firm bottom and cover, see above.
- Coli bacteria in the streams: All values in the samples taken in the streams are below the limit value of 1,000 coli bacteria/100 ml set by the authorities as a limit value for coli content in the streams.
- Application of manure to directly perishable crops: There is no ban against the application of manure on directly perishable crops.
- Smell: No dwellings are deemed to be burdened by Danish rules for the protection of dwellings from animal husbandry odours.

PNY/

NIRAS A/S