AI Insurance Review
Fund Management Committee Decision Note

November 23, 2018 Draft

Title: Risk Transfer

Issue:

A decision is required by the BC Broiler Hatching Egg Commission (the "Commission"), the BC Chicken Marketing Board (the "Chicken Board") and the BC Turkey Marketing Board (the "Turkey Board") to commit to the establishment and funding of a "disease response fund" to address the lack of a dedicated program or system of supports for the extraordinary costs to clean and disinfect (C&D) an infected premise (IP) resulting from a Notifiable Avian Influenza (NAI) discovery.

Background

- Since the 2004 Highly Pathogenic NAI outbreak, the regulated poultry industry in BC has been working collectively and collaboratively with industry associations to address the financial risks associated with a NAI discovery.
- Through the Mandatory Insurance Review (the "Review"), the poultry boards and commission identified a financial gap in addressing the extraordinary costs to C&D an IP.
- Regulated poultry operations within 3 km of the IP cannot restock their operations until the IP has completed the C&D process and CFIA has rescinded their Infected Premise declaration.
- Through the Review the regulated poultry boards and commission have determined that it is consistent with sound marketing policy for the boards and commission to provide financial support to defray most of the extraordinary cost of cleaning and disinfecting infected premises.
    - The BC Egg Marketing Board (the "Egg Board") has determined that the insurance provided through the Canadian Egg Industry Reciprocal Alliance (CEIRA) or available private insurance provides sufficient funding options and opportunities to cover the cost to C&D layer operations in the event of a NAI discovery and contribute to a timely return to a system of orderly marketing.
    - The Commission and the Chicken Board have contingency funds in place that can provide some financial assistance to cover the cost of IP C&D, but have been looking to find mechanisms to secure coverage for extreme loss situations and transfer most of that risk through insurance policies.
    - The Turkey Board has a reserve for self-insurance in case of any disease issue that may affect the turkey industry and recognizes the broader good for the regulated poultry industry in BC and need to find ways and means to ensure that all sectors have the necessary coverage for the extraordinary costs of IP C&D to enable a timely return to a system of orderly marketing.
- The regulated boards and commission had worked with CEIRA's consultants to quantify the expected losses resulting from NAI and secure estimates on the cost of annual premium for covering excess losses.

Discussion

- To assess the costs and benefits of risk transfer, two separate and distinct approaches have been used to estimate the IP C&D costs resulting from various NAI events, J.S. Cheng and Partners Inc. (JSCP) and DH AgRisk.

DH AgRisk Assessment

- DH AgRisk are London based consultants who worked with the BC Poultry Association from 2011 to 2013 to quantify losses for the establishment of the BC Captive Insurance Company.
    - DH AgRisk worked with CEIRA to develop the AI extension to the SE insurance provided to the layer industry.
    - DH AgRisk worked with CEIRA's reinsurance broker to place the excess loss coverage for NAI as well as SE.
- DH AgRisk recently completed an assessment utilizing an Animal Disease Spread Model which uses geo-spatial data on BC poultry farms based on the following bird compensation values and industry retaining the first $500,000 of loss:
    - Hatching eggs $2.00
    - Broilers $1.00
    - Layers $1.00 (the incremental cost over CEIRA coverage)
    - Turkeys $1.96 (weighted average for the three types of production)
- The results of the assessment were:
    - Simulated annual loss cost $184,709
    - Cost of Administration (16% of total premium) $57,410
    - Premium tax (4%) $16,638
    - Excess loss coverage to $6.75 million (4% ROL) $270,000
    - Total Premium, including Premium tax $432,593
- The apportionment of risk between sectors in this analysis were:
    - Hatching eggs 7.5%
    - Broilers 53.1%
    - Layers 32.9%
    - Turkeys 6.6%
- Netting out the layer share of risk would yield an annual premium estimate for the remaining three sectors of $289,838, inclusive of the 4% Premium tax, however the distribution of remaining risk between the three sectors would be:
    - Hatching eggs 11.1%
    - Broilers 79.1%
    - Turkeys 9.8%

JSCP Assessment

- In March 2018, JSCP compiled an assessment for all four poultry sectors using actuarial based models based on the following amounts of C&D coverage per bird by sector:
    - Hatching eggs $2.00
    - Broilers $1.00
    - Layers $2.50 and $0.75
    - Turkeys $2.60 (maximum paid for Toms)
- The results of the assessment using the $2.50 per layer coverage were:
    - Expected losses on an annualized and frequency basis $49,925
    - Operating Expense, including external adjuster expenses $64,000
    - Premium tax (4%) $4,747
    - Total annual premium $118,671
    - Excess loss coverage to $5 million $75,870
- Based on the first $100,000 of loss retained by the industry and excess loss coverage of $5 million plus the additional Premium tax yields an annual premium estimate of $166,090.
    - The estimate is subject to actual reinsurance premiums that would only be discoverable through the attempted placement of the coverage.

- Adjusting the JSCP premiums in line with the information provided by DH AgRisk, using a 4% rate on line (ROL) premium on the JSCP proposed $5 million excess loss coverage would result in the reinsurance cost increasing to $200,000 from the $75,870, bringing the JSCP estimated annual premium to $295,770 including layers at $2.50/bird.
    - Removing the layer risk (45%) from the JSCP estimate would reduce the estimated annual premium by $133,097 or a total of $162,673.

- The JSCP assessment resulted in the apportionment of risk between the sectors

	Layers @ $2.50	Layers @ $0.75
Hatching eggs	12.7%	18.6%
Broilers	24.3%	35.4%
Layers	45.0%	19.7%
Turkeys	18.0%	26.3%

- Netting out the layer estimates of loss yield a risk share of the remaining three sectors
    - Hatching eggs 23.1%
    - Broilers 44.1%
    - Turkeys 32.8%

Comparison of the Two Assessments

- The two assessments utilize very different modelling to quantify the loss by sector, but are based on the same production statistics, except the JSCP assessment does not include an accounting for pullet production.
- The JSCP uses a lower retained loss, $100,000 versus the $500,000 in the DH AgRisk.
    - At $500,000, the industry would be retaining the loss for all LPNAI discoveries and the likelihood of triggering a reinsurance claim would be low; the 2014 HPNAI may have triggered a reinsurance claim only if layers were included (see Considerations below).
- JSCP suggested $5 million in excess loss coverage versus the $6.75 million by DH AgRisk.
- Netting out the table egg values results a lower estimated annual premium by JSCP when using the same ROL for excess loss coverage reinsurance rates (4%); JSCP, $162,673 and DH AgRisk, $289,838.
- A main difference between the two assessments is the apportionment of risk, with broilers carrying a much greater share of the risk in the DH AgRisk assessment 79% versus 44% yielded by the JSCP assessment.

Considerations

The two assessments are based on entirely different modelling approaches.

- The JSCP assessment significantly underestimates the cost of reinsurance and does not include pullet numbers.
    - The DH AgRisk ROL is based on recent placements of reinsurance for NAI for CEIRA.
- The DH AgRisk places a significant percentage share of the loss on the broiler sector.
    - The results are not consistent with experience to date; using Serecon data for 2004, the share of loss based on number of birds ordered destroyed and the proposed level of coverage:
        - Hatching eggs 12.5%
        - Broilers 11.2%
        - Turkeys 7.3%
        - Layers 69.0%
    - In 2014, no broilers were ordered destroyed or required to undertake extraordinary C&D, nor did Ontario or the United States experience any broiler losses in the 205 HPNAI.

    - When posed with the above data, DH AgRisk's response was "Two events is not enough data to make this sort of comment on as it is simply not statistically valid, which is why we do the simulation modelling which is based on multiple scenarios and tens of thousands of simulations."
- JSCP recognized the lower risk for the broiler sector in their model which is reflected in their apportionment of risk between sectors.
- With the exclusion of layers from a collective fund, the appropriate level of excess loss coverage to purchase through reinsurance must be reassessed.
    - $3 million was the cost of IP C&D in 2004 with 69.0% of the loss attributable to layers, layer pullets or layer breeders using current coverage values.
    - $0.63 million was paid under the AgriRecovery Program for IP C&D in 2014 with the layer IP representing 36.6% of the total IP C&D paid.
    - Using inflation, the $3 million in 2004 would be roughly $4 million in 2018.
        - Given the mandatory biosecurity measures, a repeat of 2004 would most likely represent the worst case scenario; as such $4 million in excess loss should provide sufficient coverage for all four sectors.
        - Assuming layers represent at least one-third of the total C&D costs, is $3 million more than adequate to cover the worst case scenario for the remaining three sectors?
- Assuming an estimated annual premium of roughly $300,000 per year to be shared by Hatching Eggs, Chicken and Turkey, do the benefits of the excess loss coverage outweigh the annual premium cost?
    - Three scenarios are presented, two of which represent industry fully retaining the risk (using JSCP share of risk and equal sharing of the risk between the three sectors) and the insurance premium scenario presented by DH AgRisk, excluding layers and $6.75 million excess loss coverage and $0.5 million industry retention.

Recommendation

- The Commission, Chicken Board and Turkey Board have agreed-in-principle to make available funds for the 2018/19 flu season to cover the extraordinary costs to C&D an infected hatching egg, chicken or turkey producer in the event of a NAI discover to minimize the risk that the lack of dedicated funding does not deter the initiation and completion of the requisite C&D.
- The Commission, Chicken Board and Turkey Board can be in an equal to or better position than the insurance premium option at less cost to the boards and commission by establishing a "disease response fund".
- The Commission, Chicken Board and Turkey Board will need to determine:
    - How much up front capital is required to initiate the "disease response fund".?
    - How would the contributions to and payments from the "disease response fund" be shared?
        - Should the JSCP share of risk be used by the boards and commission to share the costs of any C&D resulting from a NAI discovery in 2018/19 and future contributions to and payments from the "disease response fund"?
        - Should the contributions and cost be shared equally by the three sectors.
    - What other scenarios are required for the boards and commission to consider in making a decision to proceed with the establishment of a "disease response fund"?

Sample costs for various options:

Scenario 1 – DH AgRisk Premium Based Example – 7 Year Fund Balance

	Year							
	1	**2**	**3**	**4**	**5**	**6**	**7**	Total
Premium - HPAI	358,812	365,988	373,308	380,774	388,390	396,157	404,081	2,667,510
Premium - LPAI	57,143	58,286	59,451	60,640	61,853	63,090	64,352	424,815
Loss within deductible recovery*				200,000	0	0	500,000	700,000
TOTAL PREMIUM	**415,955**	**424,274**	**432,759**	**641,415**	**450,243**	**459,248**	**968,433**	3,792,327
Cost for Re-Insurance	270,000	275,400	280,908	286,526	292,257	298,102	304,064	2,007,257
Cost of administration	57,410	58,558	59,729	60,924	62,142	63,385	64,653	426,801
Paid Claims			200,000	0	0	1,500,000	0	1,700,000
Reinsurance Deductible	500,000	500,000	500,000	500,000	500,000	500,000	500,000	
Reinsurance Recovery	0	0	0	0	0	1,000,000	0	1,000,000
Net	**88,545**	**90,316**	**-107,878**	**293,965**	**95,844**	**-402,239**	**599,716**	658,269
Investment income		2,435	4,986	2,156	10,299	13,218	2,520	35,614
Ending cash/surplus	**88,545**	**181,296**	**78,404**	**374,524**	**480,668**	**91,647**	**693,883**	

*** Assumes any losses paid within the deductible will be recovered through discretionary premium**

Scenario 2 – Boards and Commission retain the full risk of the Fund (disease response fund)

Assumptions:

- Initial capital funding commitment of $0.75 million
- Fund growth objectives:
  - Grow capital to $3.0 million over 10 years or $225,000 per year
- No annual administrative costs charged to the Fund (internalized by the boards and commission)
- With and without losses in first 7 years
- Annual contribution based on share of risk established by JSCP March 2018 Assessment
  - Hatching eggs 23.1%
  - Broilers 44.1%
  - Turkeys 32.8%

	Initial Capital	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Total After 7 years	Share after 7 Years
Breeders (23.1%)	$250,000	$51,975	$51,975	$51,975	$51,975	$51,975	$51,975	$51,975	**$613,825**	**26.4**
Broilers (44.1%)	$250,000	$99,225	$99,225	$99,225	$99,225	$99,225	$99,225	$99,225	**$944,575**	**40.6**
Turkeys (32.8%)	$250,000	$73,800	$73,800	$73,800	$73,800	$73,800	$73,800	$73,800	**$766,600**	**33.0**
Industry Contribution	**$750,000**	**$225,000**	**$225,000**	**$225,000**	**$225,000**	**$225,000**	**$225,000**	**$225,000**	**$2,325,000**	**100.0**
Accumulated Fund Total	**$750,000**	**$975,000**	**$1,200,000**	**$1,425,000**	**$1,650,000**	**$1,875,000**	**$2,100,000**	**$2,325,000**		
Claims				**$200, 000**			**$1,500,000**		**$1,700,000**	
Accumulated Fund Total after claims	**$750,000**	**$975,000**	**$1,200,000**	**$1,225,000**	**$1,450,000**	**$1,675,000**	**S400,000**	**$625,000**		

Considerations:

- After one year, the Fund will be capable of covering an HPNAI event equivalent to 2014 with the Fund still showing a surplus.
- By year 3, the Fund would have sufficient capital to cover an event equivalent to 2004 assuming no inflation and similar loss profile.
- If losses (claims) were paid in accordance with Scenario 2 below, the Fund would still have $625,000 after 7 years, roughly equivalent to the $693,883 in Scenario 2 below and would not require special levies to recover the deductible ($700,000) for a lower total after seven years of premiums/contributions.

Scenario 3 – Boards and Commission retain the full risk of the Fund (disease response fund) – Accelerated Growth Option

Assumptions:

- Initial capital funding commitment of $0.75 million
- Fund growth objectives:
  - Grow capital to $3.0 million over 3 years or $750,000 per year
- No annual administrative costs charged to the Fund (internalized by the boards and commission)
- With and without losses in first 7 years
- Annual contribution shared equally; 33.3 %; after $3 million target achieved, additional funds contributed only when losses result in the fund balance falling below $3.0 million, with an annual $250,000 maximum contribution. In the example below, Year 8 would require a further $750,000 to bring the fund total back to $3.0 million, following the Year 6, $1.5 million loss.

	Initial Capital	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**	**Year 7**	**Total After 7 years**
Breeders	$250,000	$250,000	$250,000	$250,000	$66,667	$0	$0	$250,000	**$1,316,667**
Broilers	$250,000	$250,000	$250,000	$250,000	$66,666	$0	$0	$250,000	**$1,316,666**
Turkeys	$250,000	$250,000	$250,000	$250,000	$66,667	$0	$0	$250,000	**$1,316,667**
Industry Contribution	**$750,000**	**$750,000**	**$750,000**	**$750,000**	**$200,000**	**$0**	**$0**	**$750,000**	**$3,950,000**
Accumulated Fund Total	**$750,000**	**$1,500,000**	**$2,250,000**	**$3,000,000**	**$3,000,000**	**$3,000,000**	**$3,000,000**	**$2,750,000**	
Claims				**$200, 000**			**$1,500,000**		**$1,700,000**
Accumulated Fund Total after claims	**$750,000**	**$1,500,000**	**$2,250,000**	**$2,800,000**	**$3,000,000**	**$3,000,000**	**S1,500,000**	**$2,250,000**	

Considerations:

- Initially and after one year, the fund will be capable of covering an HPNAI event equivalent to 2014 with the Fund still showing a surplus.
- The fund would have sufficient funds available by Year 2 to cover an event similar to 2004, based on a similar distribution of loss.