

**Sanford Limited**  
**Big Glory Bay Salmon Farm Resource Consent Variation**  
**Proposed Conditions:**

**A. CONDITIONS PROPOSED IN VARIATION FOR EACH INDIVIDUAL EXISTING CONSENT**

**Resource Consent AUTH-20157616, relating to MF 246**

4. (a) The total nitrogen input from feed at the marine farm site for salmon between 1 July and 30 June each year shall be restricted to 415.1 tonnes provided that:
- (i) the total nitrogen input from feed used in Big Glory Bay between 1 July and 30 June each year does not exceed 659 tonnes across all farms in Big Glory Bay, irrespective of ownership; except that
  - (ii) until such time as the requirements of Condition YY have been satisfied, the total nitrogen input from feed used in Big Glory Bay between 1 July and 30 June each year shall not exceed 583 tonnes across all farms in Big Glory Bay, irrespective of ownership.
- (b) Activities authorised by Condition 4(a) shall:
- Not increase the average excess total ammonia nitrogen in Big Glory Bay by more than 30 µg/L at the surface of the water column, when compared with baseline data from the period July 2015 to December 2017; or
  - Not result in the annual median concentration of chlorophyll-a in the water column exceeding 3.5 µg/L at reference sites in Big Glory Bay (triggers a Tier One response – see (d) below): or
  - Not result in the annual median concentration of chlorophyll-a in the water column at any site being greater than 5 µg/L (triggers a Tier Two response – see (d) below); or
  - Not reduce the average dissolved oxygen saturation at any sampling point in the water column at any water quality site below 70%; or
  - Meet the following Environmental Quality Standards (EQS) for the seabed at the edge of the pens:
    - The benthic community has more than a few opportunistic species (i.e. Capitellid and Dorvillea worms, nematodes) present

**WITHOUT PREJUDICE FOR DISCUSSION PURPOSES**

- No more than two replicate cores with no taxa (azoic). If any benthic sample contains a large number of mussel shells or the grab is prevented from closing due to the presence of mussel shells, the sample shall be retaken. In the event that three grab samples at any one location all contain a large number of mussel shells or the grab is prevented from closing due to the presence of mussel shells the sampling location shall be relocated approximately 10 metres distant.
  - No obvious, spontaneous out-gassing (H<sub>2</sub>S/methane)
  - Bacteria mat (*Beggiatoa*) coverage not greater than 50%
- (c) Water quality monitoring will be detailed in the Big Glory Bay Salmon Farm Environmental Management Plan ("BGBSFEMP") required by the conditions of this consent and shall include monthly sampling of nutrients (NH<sub>4</sub>-N, NO<sub>3</sub>-N, NO<sub>2</sub>-N, DRP, TN and TP), chlorophyll a, phytoplankton composition (reference sites), temperature, dissolved oxygen (DO), water clarity, salinity at the locations specified in the BGBSFEMP. A new "Reference" site outside Big Glory Bay shall be established.
- (d) In the event that the Water Quality Standards (WQS) for chlorophyll a in (b) are breached then a tiered response is required, the first to trigger further investigation of the data and wider environmental changes (Tier One) and the second (Tier Two) to require a management response which may include reducing stocking or following after the next harvest, as detailed in the BGBSFEMP.
- The initial WQS shall be reviewed in the annual monitoring report at the end of the third year following when the total nitrogen input from feed used in Big Glory Bay between 1 July and 30 June first exceeds 583 tonnes across all farms in Big Glory Bay, irrespective of ownership.
- (e) Seabed monitoring will be detailed in the BGBSFEMP and shall include annual monitoring at the locations specified in the BGBSFEMP for sediment grain size, total organic matter (TOM), total organic carbon (TOC), copper and zinc, appearance of sulphide depth and general colour, depth of redox layer, obvious outgassing, mat forming bacteria, epifauna and infauna.
- (f) In the event that the EQS for the seabed are breached, a substantive improvement within 12 months of that date of confirmation is required or the site shall be followed as per the BGBSFEMP).
- (g) Notwithstanding Condition 16, a suitably qualified, experienced and independent person shall prepare a monitoring plan, the purpose of which is to enable compliance with the standards in Condition 4(b) to be assessed.

The monitoring plan shall be submitted to Environment Southland for

Further revised draft – 9:30 am Friday 05 October 2018

WITHOUT PREJUDICE FOR DISCUSSION PURPOSES

approval in a technical certification capacity two months before the consent holder's total nitrogen input from feed in Big Glory Bay is increased above 442.752 tonnes/year.

**Resource Consent 207256, relating to MF 249**

5. (a) Except where Condition 5(b) applies, the total nitrogen input from feed at the marine farm site for salmon between 1 July and 30 June each year shall be restricted to 73.792 tonnes.

(b) Where the consent holder:

- (i) holds additional resource consents that authorise salmon farming in Big Glory Bay that have conditions specifying allowable nitrogen input from feed; and/or
- (ii) has the written agreement of another consent holder in Big Glory Bay that holds a resource consent with conditions specifying allowable nitrogen input;

the consent holder may utilise that nitrogen input from feed either wholly or in part, between any or all of the consent holder's marine farm sites provided that:

- (iii) the total nitrogen input from feed used in Big Glory Bay between 1 July and 30 June each year does not exceed 659 tonnes across all farms in Big Glory Bay, irrespective of ownership; except that
- (iv) until such time as the requirements of Condition YY have been satisfied, the total nitrogen input from feed used in Big Glory Bay between 1 July and 30 June each year shall not exceed 583 tonnes across all farms in Big Glory Bay, irrespective of ownership; and
- (v) modelling in DELFT3D, or alternative modelling software agreed to in writing by Environment Southland, has been undertaken by a suitably qualified, experienced, and independent person, which demonstrates that an additional amount of nitrogen input from feed above that authorised by Condition 5(a) does:
  - Not increase the average excess total ammonia nitrogen in Big Glory Bay by more than 30 µg/L at the surface of the water column, when compared with baseline data from the period July 2015 to December 2017; or
  - Not result in the annual median concentration of chlorophyll-

Further revised draft – 9:30 am Friday 05 October 2018

WITHOUT PREJUDICE FOR DISCUSSION PURPOSES

a in the water column exceeding 3.5 µg/L at reference sites in Big Glory Bay: or

- Not result in the annual median concentration of chlorophyll-**in the water column** at any site being greater than 5 µg/L; or
  - Not reduce the average dissolved oxygen **saturation** at any **sampling** point in the water column at any water quality site **below 70%**; or
  - Not result in total organic carbon deposition greater than 0.73 kg/m<sup>2</sup>/year more than 100 metres from the boundary of the site; or
  - Not result in total faeces and solid waste deposition greater than 5 kg/m<sup>2</sup>/year more than 100 metres from the boundary of the site; and
- (vi) the additional nitrogen input from feed allows compliance with criteria listed in Condition 5(b)(v) to be assessed; and
- (vii) the feed deployed shall be consistent with the parameters of the feed modelled.

(c) Water quality monitoring will be detailed in the Big Glory Bay Salmon Farm Environmental Management Plan ("BGBSFEMP") required by the conditions of this consent and shall include monthly sampling of nutrients (NH<sub>4</sub>-N, NO<sub>3</sub>-N, NO<sub>2</sub>-N, DRP, TN and TP), chlorophyll a, phytoplankton composition (reference sites), temperature, dissolved oxygen (DO), water clarity, salinity at the locations specified in the BGBSFEMP. A new "Reference" site outside Big Glory Bay shall be established.

(d) In the event that the Water Quality Standards (WQS) for chlorophyll a in (b) are breached then a tiered response is required, the first to trigger further investigation of the data and wider environmental changes (Tier One) and the second (Tier Two) to require a management response which may include reducing stocking or following after the next harvest, as detailed in the BGBSFEMP.

The initial WQS shall be reviewed in the annual monitoring report at the end of the third year following when the total nitrogen input from feed used in Big Glory Bay between 1 July and 30 June first exceeds 583 tonnes across all farms in Big Glory Bay, irrespective of ownership.

(e) Seabed monitoring will be detailed in the BGBSFEMP and shall include annual monitoring at the locations specified in the BGBSFEMP for sediment grain size, total organic matter (TOM), total organic carbon (TOC), copper and zinc, appearance of sulphide depth and general colour, depth of redox layer, obvious out-gassing, mat forming bacteria, epifauna and infauna.

Further revised draft – 9:30 am Friday 05 October 2018

WITHOUT PREJUDICE FOR DISCUSSION PURPOSES

- (f) In the event that the EQS for the seabed are breached, a substantive improvement within 12 months of that date of confirmation is required or the site shall be followed as per the BGBSFEMP).
- (g) Notwithstanding Condition 16, a suitably qualified, experienced and independent person shall prepare a monitoring plan, the purposes of which are to:
- (i) Enable compliance with the standards in Condition 5(b)(v) (other than those relating to sediment deposition) to be assessed; and
  - (ii) Meet the following Environmental Quality Standards (EQS) for the seabed at the edge of the pens:
    - The benthic community has more than a few opportunistic species (i.e. Capitellid and Dorvillea worms, nematodes) present
    - No more than two replicate cores with no taxa (azoic). If any benthic sample contains a large number of mussel shells or the grab is prevented from closing due to the presence of mussel shells, the sample shall be retaken. In the event that three grab samples at any one location all contain a large number of mussel shells or the grab is prevented from closing due to the presence of mussel shells the sampling location shall be relocated approximately 10 metres distant.
    - No obvious, spontaneous out-gassing (H<sub>2</sub>S/methane)
    - Bacteria mat (*Beggiatoa*) coverage not greater than 50%

The monitoring plan shall be submitted to Environment Southland for approval in a technical certification capacity two months before the consent holder's total nitrogen input from feed at this farm is increased above 73.792 tonnes/year.

**Resource Consent 203236, relating to LI 320**

5. (a) The total nitrogen input from feed at the marine farm site for salmon between 1 July and 30 June each year shall be restricted to 200.6 tonnes provided that:
- (i) the total nitrogen input from feed used in Big Glory Bay between 1 July and 30 June each year does not exceed 659 tonnes across all farms in Big Glory Bay, irrespective of ownership; except that
  - (ii) until such time as the requirements of Condition YY have been satisfied, the total nitrogen input from feed used in Big Glory Bay between 1 July and 30 June each year shall not exceed 583 tonnes across all farms in Big Glory Bay, irrespective of ownership.

Further revised draft – 9:30 am Friday 05 October 2018

WITHOUT PREJUDICE FOR DISCUSSION PURPOSES

- (b) Activities authorised by Condition 5(a) shall:
- Not increase the average excess total ammonia nitrogen in Big Glory Bay by more than 30 µg/L at the surface of the water column, when compared with baseline data from the period July 2015 to December 2017; or
  - Not result in the annual median concentration of chlorophyll-a in the water column exceeding 3.5 µg/L at reference sites in Big Glory Bay (triggers a Tier One response – see (d) below); or
  - Not result in the annual median concentration of chlorophyll-a in the water column at any site being greater than 5 µg/L (triggers a Tier Two response – see (d)— below); or
  - Not reduce the average dissolved oxygen saturation at any sampling point in the water column at any water quality site below 70%; or
  - Meet the following Environmental Quality Standards (EQS) for the seabed at the edge of the pens:
    - The benthic community has more than a few opportunistic species (i.e. Capitellid and Dorvillea worms, nematodes) present
    - No more than two replicate cores with no taxa (azoic). If any benthic sample contains a large number of mussel shells or the grab is prevented from closing due to the presence of mussel shells, the sample shall be retaken. In the event that three grab samples at any one location all contain a large number of mussel shells or the grab is prevented from closing due to the presence of mussel shells the sampling location shall be relocated approximately 10 metres distant.
    - No obvious, spontaneous out-gassing (H<sub>2</sub>S/methane)
    - Bacteria mat (*Beggiatoa*) coverage not greater than 50%
- (c) Water quality monitoring will be detailed in the Big Glory Bay Salmon Farm Environmental Management Plan ("BGBSFEMP") required by the conditions of this consent and shall include monthly sampling of nutrients (NH<sub>4</sub>-N, NO<sub>3</sub>-N, NO<sub>2</sub>-N, DRP, TN and TP), chlorophyll a, phytoplankton composition (reference sites), temperature, dissolved oxygen (DO), water clarity, salinity at the locations specified in the BGBSFEMP. A new "Reference" site outside Big Glory Bay shall be established.
- (d) In the event that the Water Quality Standards (WQS) for chlorophyll a in (b) are breached then a tiered response is required, the first to trigger further investigation of the data and wider environmental changes (Tier One) and the second (Tier Two) to require a management response which

Further revised draft – 9:30 am Friday 05 October 2018

**WITHOUT PREJUDICE FOR DISCUSSION PURPOSES**

may include reducing stocking or following after the next harvest, as detailed in the BGBSFEMP.

The initial WQS shall be reviewed in the annual monitoring report at the end of the third year following when the total nitrogen input from feed used in Big Glory Bay between 1 July and 30 June first exceeds 583 tonnes across all farms in Big Glory Bay, irrespective of ownership.

- (e) Seabed monitoring will be detailed in the BGBSFEMP and shall include annual monitoring at the locations specified in the BGBSFEMP for sediment grain size, total organic matter (TOM), total organic carbon (TOC), copper and zinc, appearance of sulphide depth and general colour, depth of redox layer, obvious out-gassing, mat forming bacteria, epifauna and infauna.
- (f) In the event that the EQS for the seabed are breached, a substantive improvement within 12 months of that date of confirmation is required or the site shall be followed as per the BGBSFEMP).
- (g) Notwithstanding Condition 16, a suitably qualified, experienced and independent person shall prepare a monitoring plan, the purpose of which is to enable compliance with the standards in Condition 4(b) to be assessed.

The monitoring plan shall be submitted to Environment Southland for approval in a technical certification capacity two months before the consent holder's total nitrogen input from feed in Big Glory Bay is increased above 442.752 tonnes/year.

**Resource Consent 203237, relating to LI 321**

- 5. (a) Except where Condition 5(b) applies, the total nitrogen input from feed at the marine farm site for salmon between 1 July and 30 June each year shall be restricted to 73.792 tonnes.
- (b) Where the consent holder:
  - (i) holds additional resource consents that authorise salmon farming in Big Glory Bay that have conditions specifying allowable nitrogen input from feed; and/or
  - (ii) has the written agreement of another consent holder in Big Glory Bay that holds a resource consent with conditions specifying allowable nitrogen input;

the consent holder may utilise that nitrogen input from feed, either wholly or in part, between any or all of the consent holder's marine farm sites provided that:

- (iii) the total nitrogen input from feed used in Big Glory Bay between 1 July and 30 June each year does not exceed 659 tonnes across all

Further revised draft – 9:30 am Friday 05 October 2018

WITHOUT PREJUDICE FOR DISCUSSION PURPOSES

farms in Big Glory Bay, irrespective of ownership; except that

(iv) until such time as the requirements of Condition YY have been satisfied, the total nitrogen input from feed used in Big Glory Bay between 1 July and 30 June each year shall not exceed 583 tonnes across all farms in Big Glory Bay, irrespective of ownership; and

(v) modelling in DELFT3D, or alternative modelling software agreed to in writing by Environment Southland, has been undertaken by a suitably qualified, experienced, and independent person, which demonstrates that an additional amount of nitrogen input from feed above that authorised by Condition 5(a) does:

- Not increase the average excess total ammonia nitrogen in Big Glory Bay by more than 30 µg/L at the surface of the water column, when compared with baseline data from the period July 2015 to December 2017; or
- Not result in the annual median concentration of chlorophyll-a in the water column exceeding 3.5 µg/L at reference sites in Big Glory Bay: or
- Not result in the annual median concentration of chlorophyll-a in the water column at any site being greater than 5 µg/L; or
- Not reduce the average dissolved oxygen saturation at any sampling point in the water column at any water quality site below 70%; or
- Not result in total organic carbon deposition greater than 0.73 kg/m<sup>2</sup>/year more than 100 metres from the boundary of the site; or
- Not result in total faeces and solid waste deposition greater than 5 kg/m<sup>2</sup>/year more than 100 metres from the boundary of the site; and

(vi) the additional nitrogen input from feed allows compliance with criteria listed in Condition 5(b)(v) to be assessed; and

(vii) the feed deployed shall be consistent with the parameters of the feed modelled.

(c) Water quality monitoring will be detailed in the Big Glory Bay Salmon Farm Environmental Management Plan ("BGBSFEMP") required by the conditions of this consent and shall include monthly sampling of nutrients (NH<sub>4</sub>-N, NO<sub>3</sub>-N, NO<sub>2</sub>-N, DRP, TN and TP), chlorophyll a, phytoplankton composition (reference sites), temperature, dissolved oxygen (DO), water

Further revised draft – 9:30 am Friday 05 October 2018



WITHOUT PREJUDICE FOR DISCUSSION PURPOSES

clarity, salinity at the locations specified in the BGBSFEMP. A new "Reference" site outside Big Glory Bay shall be established.

- (d) In the event that the Water Quality Standards (WQS) for chlorophyll a in (b) are breached then a tiered response is required, the first to trigger further investigation of the data and wider environmental changes (Tier One) and the second (Tier Two) to require a management response which may include reducing stocking or following after the next harvest, as detailed in the BGBSFEMP.

The initial WQS shall be reviewed in the annual monitoring report at the end of the third year following when the total nitrogen input from feed used in Big Glory Bay between 1 July and 30 June first exceeds 583 tonnes across all farms in Big Glory Bay, irrespective of ownership.

- (e) Seabed monitoring will be detailed in the BGBSFEMP and shall include annual monitoring at the locations specified in the BGBSFEMP for sediment grain size, total organic matter (TOM), total organic carbon (TOC), copper and zinc, appearance of sulphide depth and general colour, depth of redox layer, obvious out-gassing, mat forming bacteria, epifauna and infauna.

- (f) In the event that the EQS for the seabed are breached, a substantive improvement within 12 months of that date of confirmation is required or the site shall be followed as per the BGBSFEMP).

- (g) Notwithstanding Condition 16, a suitably qualified, experienced and independent person shall prepare a monitoring plan, the purposes of which are to:

(i) Enable compliance with the standards in Condition 5(b)(v) (other than those relating to sediment deposition) to be assessed; and

(ii) Meet the following Environmental Quality Standards (EQS) for the seabed at the edge of the pens:

- The benthic community has more than a few opportunistic species (i.e. Capitellid and Dorvillea worms, nematodes) present
- No more than two replicate cores with no taxa (azoic). If any benthic sample contains a large number of mussel shells or the grab is prevented from closing due to the presence of mussel shells, the sample shall be retaken. In the event that three grab samples at any one location all contain a large number of mussel shells or the grab is prevented from closing due to the presence of mussel shells the sampling location shall be relocated approximately 10 metres distant.
- No obvious, spontaneous out-gassing (H<sub>2</sub>S/methane)
- Bacteria mat (*Beggiatoa*) coverage not greater than 50%

Further revised draft – 9:30 am Friday 05 October 2018

## WITHOUT PREJUDICE FOR DISCUSSION PURPOSES

The monitoring plan shall be submitted to Environment Southland for approval in a technical certification capacity two months before the consent holder's total nitrogen input from feed at this farm is increased above 73.792 tonnes/year.

### Resource Consent 203240, relating LI 338

5. (a) Except where Condition 5(b) applies, the total nitrogen input from feed at the marine farm site for salmon between 1 July and 30 June each year shall be restricted to 73.792 tonnes.

(b) Where the consent holder:

- (i) holds additional resource consents that authorise salmon farming in Big Glory Bay that have conditions specifying allowable nitrogen input from feed; and/or
- (ii) has the written agreement of another consent holder in Big Glory Bay that holds a resource consent with conditions specifying allowable nitrogen input;

the consent holder may utilise that nitrogen input from feed, either wholly or in part, between any or all of the consent holder's marine farm sites provided that:

- (iii) the total nitrogen input from feed used in Big Glory Bay between 1 July and 30 June each year does not exceed 659 tonnes across all farms in Big Glory Bay, irrespective of ownership; except that
- (iv) until such time as the requirements of Condition YY have been satisfied, the total nitrogen input from feed used in Big Glory Bay between 1 July and 30 June each year shall not exceed 583 tonnes across all farms in Big Glory Bay, irrespective of ownership; and
- (v) modelling in DELFT3D, or alternative modelling software agreed to in writing by Environment Southland, has been undertaken by a suitably qualified, experienced, and independent person, which demonstrates that an additional amount of nitrogen input from feed above that authorised by Condition 5(a) does:
  - Not increase the average excess total ammonia nitrogen in Big Glory Bay by more than 30 µg/L at the surface of the water column, when compared with baseline data from the period July 2015 to December 2017; or
  - Not result in the annual median concentration of chlorophyll-a in the water column exceeding 3.5 µg/L at reference sites in Big Glory Bay; or

Further revised draft – 9:30 am Friday 05 October 2018

## WITHOUT PREJUDICE FOR DISCUSSION PURPOSES

- Not result in the annual median concentration of chlorophyll-a **in the water column** at any site being greater than 5 µg/L; or
  - Not reduce the average dissolved oxygen **saturation** at any **sampling** point in the water column at any water quality site **below 70%**; or
  - Not result in total organic carbon deposition greater than 0.73 kg/m<sup>2</sup>/year more than 100 metres from the boundary of the site; or
  - Not result in total faeces and solid waste deposition greater than 5 kg/m<sup>2</sup>/year more than 100 metres from the boundary of the site; and
- (vi) the additional nitrogen input from feed allows compliance with criteria listed in Condition 5(b)(v) to be assessed; and
- (vii) the feed deployed shall be consistent with the parameters of the feed modelled.
- (c) Water quality monitoring will be detailed in the Big Glory Bay Salmon Farm Environmental Management Plan ("BGBSFEMP") required by the conditions of this consent and shall include monthly sampling of nutrients (NH<sub>4</sub>-N, NO<sub>3</sub>-N, NO<sub>2</sub>-N, DRP, TN and TP), chlorophyll a, phytoplankton composition (reference sites), temperature, dissolved oxygen (DO), water clarity, salinity at the locations specified in the BGBSFEMP. A new "Reference" site outside Big Glory Bay shall be established.
- (d) In the event that the Water Quality Standards (WQS) for chlorophyll a in (b) are breached then a tiered response is required, the first to trigger further investigation of the data and wider environmental changes (Tier One) and the second (Tier Two) to require a management response which may include reducing stocking or following after the next harvest, as detailed in the BGBSFEMP.
- The initial WQS shall be reviewed in the annual monitoring report at the end of the third year following when the total nitrogen input from feed used in Big Glory Bay between 1 July and 30 June first exceeds 583 tonnes across all farms in Big Glory Bay, irrespective of ownership.
- (e) Seabed monitoring will be detailed in the BGBSFEMP and shall include annual monitoring at the locations specified in the BGBSFEMP for sediment grain size, total organic matter (TOM), total organic carbon (TOC), copper and zinc, appearance of sulphide depth and general colour, depth of redox layer, obvious out-gassing, mat forming bacteria, epifauna and infauna.
- (f) In the event that the EQS for the seabed are breached, a substantive

Further revised draft – 9:30 am Friday 05 October 2018

**WITHOUT PREJUDICE FOR DISCUSSION PURPOSES**

improvement within 12 months of that date of confirmation is required or the site shall be followed as per the BGBSFEMP).

- (g) Notwithstanding Condition 16, a suitably qualified, experienced and independent person shall prepare a monitoring plan, the purposes of which are to:
- (i) Enable compliance with those standards in Condition 5(b)(v) (other than those relating to sediment deposition) to be assessed; and
  - (ii) Meet the following Environmental Quality Standards (EQS) for the seabed at the edge of the pens:
    - The benthic community has more than a few opportunistic species (i.e. Capitellid and Dorvillea worms, nematodes) present
    - No more than two replicate cores with no taxa (azoic). If any benthic sample contains a large number of mussel shells or the grab is prevented from closing due to the presence of mussel shells, the sample shall be retaken. In the event that three grab samples at any one location all contain a large number of mussel shells or the grab is prevented from closing due to the presence of mussel shells the sampling location shall be relocated approximately 10 metres distant.
    - No obvious, spontaneous out-gassing (H<sub>2</sub>S/methane)
    - Bacteria mat (*Beggiatoa*) coverage not greater than 50%

The monitoring plan shall be submitted to Environment Southland for approval in a technical certification capacity two months before the consent holder's total nitrogen input from feed at this farm is increased above 73.792 tonnes/year.

**Resource Consent 203241, relating to LI 339**

5. (a) Except where Condition 5(b) applies, the total nitrogen input from feed at the marine farm site for salmon between 1 July and 30 June each year shall be restricted to 55.344 tonnes.
- (b) Where the consent holder:
- (i) holds additional resource consents that authorise salmon farming in Big Glory Bay that have conditions specifying allowable nitrogen input from feed; and/or
  - (ii) has the written agreement of another consent holder in Big Glory Bay that holds a resource consent with conditions specifying allowable nitrogen input;

Further revised draft – 9:30 am Friday 05 October 2018

**WITHOUT PREJUDICE FOR DISCUSSION PURPOSES**

the consent holder may utilise that nitrogen input from feed, either wholly or in part, between any or all of the consent holder's marine farm sites provided that:

- (iii) the total nitrogen input from feed used in Big Glory Bay between 1 July and 30 June each year does not exceed 659 tonnes across all farms in Big Glory Bay, irrespective of ownership; except that
- (iv) until such time as the requirements of Condition YY have been satisfied, the total nitrogen input from feed used in Big Glory Bay between 1 July and 30 June each year shall not exceed 583 tonnes across all farms in Big Glory Bay, irrespective of ownership; and
- (v) modelling in DELFT3D, or alternative modelling software agreed to in writing by Environment Southland, has been undertaken by a suitably qualified, experienced, and independent person, which demonstrates that an additional amount of nitrogen input from feed above that authorised by Condition 5(a) does:
  - Not increase the average excess total ammonia nitrogen in Big Glory Bay by more than 30 µg/L at the surface of the water column, when compared with baseline data from the period July 2015 to December 2017; or
  - Not result in the annual median concentration of chlorophyll-a in the water column exceeding 3.5 µg/L at reference sites in Big Glory Bay: or
  - Not result in the annual median concentration of chlorophyll-a in the water column at any site being greater than 5 µg/L; or
  - Not reduce the average dissolved oxygen saturation at any sampling point in the water column at any water quality site below 70%; or
  - Not result in total organic carbon deposition greater than 0.73 kg/m<sup>2</sup>/year more than 100 metres from the boundary of the site; or
  - Not result in total faeces and solid waste deposition greater than 5 kg/m<sup>2</sup>/year more than 100 metres from the boundary of the site; and
- (vi) the additional nitrogen input from feed allows compliance with criteria listed in Condition 5(b)(v) to be assessed; and
- (vii) the feed deployed shall be consistent with the parameters of the feed modelled.

Further revised draft – 9:30 am Friday 05 October 2018

WITHOUT PREJUDICE FOR DISCUSSION PURPOSES

- (c) Water quality monitoring will be detailed in the Big Glory Bay Salmon Farm Environmental Management Plan ("BGBSFEMP") required by the conditions of this consent and shall include monthly sampling of nutrients (NH<sub>4</sub>-N, NO<sub>3</sub>-N, NO<sub>2</sub>-N, DRP, TN and TP), chlorophyll a, phytoplankton composition (reference sites), temperature, dissolved oxygen (DO), water clarity, salinity at the locations specified in the BGBSFEMP. A new "Reference" site outside Big Glory Bay shall be established.
- (d) In the event that the Water Quality Standards (WQS) for chlorophyll a in (b) are breached then a tiered response is required, the first to trigger further investigation of the data and wider environmental changes (Tier One) and the second (Tier Two) to require a management response which may include reducing stocking or following after the next harvest, as detailed in the BGBSFEMP.
- The initial WQS shall be reviewed in the annual monitoring report at the end of the third year following when the total nitrogen input from feed used in Big Glory Bay between 1 July and 30 June first exceeds 583 tonnes across all farms in Big Glory Bay, irrespective of ownership.
- (e) Seabed monitoring will be detailed in the BGBSFEMP and shall include annual monitoring at the locations specified in the BGBSFEMP for sediment grain size, total organic matter (TOM), total organic carbon (TOC), copper and zinc, appearance of sulphide depth and general colour, depth of redox layer, obvious out-gassing, mat forming bacteria, epifauna and infauna.
- (f) In the event that the EQS for the seabed are breached, a substantive improvement within 12 months of that date of confirmation is required or the site shall be followed as per the BGBSFEMP).
- (g) Notwithstanding Condition 16, a suitably qualified, experienced and independent person shall prepare a monitoring plan, the purposes of which are to:
- (i) Enable compliance with the standards in Condition 5(b)(v) (other than those relating to sediment deposition) to be assessed; and
  - (ii) Meet the following Environmental Quality Standards (EQS) for the seabed at the edge of the pens:
    - The benthic community has more than a few opportunistic species (i.e. Capitellid and Dorvillea worms, nematodes) present
    - No more than two replicate cores with no taxa (azoic). If any benthic sample contains a large number of mussel shells or the grab is prevented from closing due to the presence of mussel shells, the sample shall be retaken. In the event that three grab samples at any one location all contain a large number of mussel shells or the grab is prevented from closing due to the presence

Further revised draft – 9:30 am Friday 05 October 2018

WITHOUT PREJUDICE FOR DISCUSSION PURPOSES

of mussel shells the sampling location shall be relocated approximately 10 metres distant.

- No obvious, spontaneous out-gassing (H<sub>2</sub>S/methane)
- Bacteria mat (*Beggiatoa*) coverage not greater than 50%

The monitoring plan shall be submitted to Environment Southland for approval in a technical certification capacity two months before the consent holder's total nitrogen input from feed at this farm is increased above 55.344 tonnes/year.

**Resource Consent 203242, relating to LI 340**

5. (a) Except where Condition 5(b) applies, the total nitrogen input from feed at the marine farm site for salmon between 1 July and 30 June each year shall be restricted to 55.344 tonnes.

(b) Where the consent holder:

- (i) holds additional resource consents that authorise salmon farming in Big Glory Bay that have conditions specifying allowable nitrogen input from feed; and/or
- (ii) has the written agreement of another consent holder in Big Glory Bay that holds a resource consent with conditions specifying allowable nitrogen input;

the consent holder may utilise that nitrogen input from feed, either wholly or in part, between any or all of the consent holder's marine farm sites provided that:

- (iii) the total nitrogen input from feed used in Big Glory Bay between 1 July and 30 June each year does not exceed 659 tonnes across all farms in Big Glory Bay, irrespective of ownership; except that
- (iv) until such time as the requirements of Condition YY have been satisfied, the total nitrogen input from feed used in Big Glory Bay between 1 July and 30 June each year shall not exceed 583 tonnes across all farms in Big Glory Bay, irrespective of ownership; and
- (v) modelling in DELFT3D, or alternative modelling software agreed to in writing by Environment Southland, has been undertaken by a suitably qualified, experienced, and independent person, which demonstrates that an additional amount of nitrogen input from feed above that authorised by Condition 5(a) does:

- Not increase the average excess total ammonia nitrogen in Big Glory Bay by more than 30 µg/L at the surface of the

Further revised draft – 9:30 am Friday 05 October 2018

WITHOUT PREJUDICE FOR DISCUSSION PURPOSES

water column, when compared with baseline data from the period July 2015 to December 2017; or

- Not result in the annual median concentration of chlorophyll-a in the water column exceeding 3.5 µg/L at reference sites in Big Glory Bay: or
- Not result in the annual median concentration of chlorophyll-a in the water column at any site being greater than 5 µg/L; or
- Not reduce the average dissolved oxygen saturation at any sampling point in the water column at any water quality site below 70%; or
- Not result in total organic carbon deposition greater than 0.73 kg/m<sup>2</sup>/year more than 100 metres from the boundary of the site; or
- Not result in total faeces and solid waste deposition greater than 5 kg/m<sup>2</sup>/year more than 100 metres from the boundary of the site; and

(vi) the additional nitrogen input from feed allows compliance with criteria listed in Condition 5(b)(v) to be assessed; and

(vii) the feed deployed shall be consistent with the parameters of the feed modelled.

(c) Water quality monitoring will be detailed in the Big Glory Bay Salmon Farm Environmental Management Plan ("BGBSFEMP") required by the conditions of this consent and shall include monthly sampling of nutrients (NH<sub>4</sub>-N, NO<sub>3</sub>-N, NO<sub>2</sub>-N, DRP, TN and TP), chlorophyll a, phytoplankton composition (reference sites), temperature, dissolved oxygen (DO), water clarity, salinity at the locations specified in the BGBSFEMP. A new "Reference" site outside Big Glory Bay shall be established.

(d) In the event that the Water Quality Standards (WQS) for chlorophyll a in (b) are breached then a tiered response is required, the first to trigger further investigation of the data and wider environmental changes (Tier One) and the second (Tier Two) to require a management response which may include reducing stocking or following after the next harvest, as detailed in the BGBSFEMP.

The initial WQS shall be reviewed in the annual monitoring report at the end of the third year following when the total nitrogen input from feed used in Big Glory Bay between 1 July and 30 June first exceeds 583 tonnes across all farms in Big Glory Bay, irrespective of ownership.

(e) Seabed monitoring will be detailed in the BGBSFEMP and shall include

Further revised draft – 9:30 am Friday 05 October 2018



## WITHOUT PREJUDICE FOR DISCUSSION PURPOSES

annual monitoring at the locations specified in the BGBSFEMP for sediment grain size, total organic matter (TOM), total organic carbon (TOC), copper and zinc, appearance of sulphide depth and general colour, depth of redox layer, obvious out-gassing, mat forming bacteria, epifauna and infauna.

- (f) In the event that the EQS for the seabed are breached, a substantive improvement within 12 months of that date of confirmation is required or the site shall be followed as per the BGBSFEMP).
- (g) Notwithstanding Condition 16, a suitably qualified, experienced and independent person shall prepare a monitoring plan, the purposes of which are to:
- (i) Enable compliance with the standards in Condition 5(b)(v) (other than those relating to sediment deposition) to be assessed; and
  - (ii) Meet the following Environmental Quality Standards (EQS) for the seabed at the edge of the pens:
    - The benthic community has more than a few opportunistic species (i.e. Capitellid and Dorvillea worms, nematodes) present
    - No more than two replicate cores with no taxa (azoic). If any benthic sample contains a large number of mussel shells or the grab is prevented from closing due to the presence of mussel shells, the sample shall be retaken. In the event that three grab samples at any one location all contain a large number of mussel shells or the grab is prevented from closing due to the presence of mussel shells the sampling location shall be relocated approximately 10 metres distant.
    - No obvious, spontaneous out-gassing (H<sub>2</sub>S/methane)
    - Bacteria mat (*Beggiatoa*) coverage not greater than 50%

The monitoring plan shall be submitted to Environment Southland for approval in a technical certification capacity two months before the consent holder's total nitrogen input from feed at this farm is increased above 55.344 tonnes/year.

## **B. ADDITIONAL CONDITIONS PROPOSED TO BE INCLUDED ON EACH INDIVIDUAL CONSENT**

### **Big Glory Bay Salmon Farm Environmental Management Plan**

1. Notwithstanding any other conditions of this consent, the consent holder shall, no later than [insert date], submit to Environment Southland, a Big Glory Bay Salmon

Further revised draft – 9:30 am Friday 05 October 2018

## WITHOUT PREJUDICE FOR DISCUSSION PURPOSES

Farm Environmental Management Plan ("BGBSFEMP") for approval in a technical certification capacity.

2. The BGBSFEMP required by Condition 1:
  - a. May be updated by the consent holder at any time; and
  - b. Shall be updated by the consent holder at least once in every two year period, within three months of the completion of the Technology Update Report required by Condition 5;  
  
provided that any updated provisions shall only apply, once the updated BGBSFEMP has been approved in a technical certification capacity by Environment Southland.
3. The purpose of the BGBSFEMP required by Condition 1, or any updated BGBSFEMP prepared in accordance with Condition 2, is to set out:
  - a. The procedures and practices to be implemented by the consent holder in order to ensure compliance with Conditions [x – y] of this consent; and
  - b. The proposed layout of each salmon farm site and how this is expected to change over each two year period; and
  - c. The maintenance procedures to be followed to ensure the ongoing efficacy of all salmon farm structures; and
  - d. The procedures and practices to be implemented to minimise, to the extent practicable, the interactions of marine mammals and seabirds with the farm site; and
  - e. The procedures, practices and monitoring to be implemented to meet the objective of reducing historically elevated concentrations of copper and zinc in sediments beneath the farm site to those that satisfy the ANZECC (2000) Interim Sediment Quality Guidelines; and
  - f. How the results of the monitoring required by the conditions of this consent will be utilised to adapt, as quickly as practicable, operational farming practices, including but not limited to the following of individual sites, in the event that monitoring indicates that unforeseen environmental effects may arise; and
  - g. Any changes in salmon farming technology and/or farm management practices identified in the Technology Update Report required by Condition 5 that the consent holder proposes to implement.
4. When determining practicability for the purposes of Condition 3 f), the following factors will be recognised:
  - a. Fish should be allowed to grow to market ready size before being harvested; and

Further revised draft – 9:30 am Friday 05 October 2018

**WITHOUT PREJUDICE FOR DISCUSSION PURPOSES**

- b. Salmon cage relocation to allow fallowing should not compromise fish health or the scheduling of fish harvesting.

**Technology Update Report**

5. At three yearly intervals during the term of this consent, the consent holder shall engage an appropriately qualified and experienced professional to prepare a Technology Update Report and, following consultation with Environment Southland, provide it to Environment Southland.

The purpose of the Technology Update Report is to:

- a. Evaluate and report on any new developments in salmon farming technology and/or farm management practices that have the potential to reduce the deposition on the seafloor of:
- i. Uneaten salmon feed; and
  - ii. Salmon faeces.
- b. Any environmental benefits that could be expected by adopting that technology and/or farm management practice; and
- c. The feasibility of adopting that technology and/or farm management practice, including, but not limited to financial implications.

**Advice Note**

Conditions 1 – 4 are included on each of the consent holder's salmon farming resource consents in Big Glory Bay. It is envisaged the one BGSFEMP and one Technology Update Report will be prepared that addresses all the consent holder's salmon farms in Big Glory Bay, rather than having a number of individual documents.

**Add the Following to the Monitoring Condition of each Consent**

- X. The annual monitoring report required by Condition [y] of this consent shall include:
- a. A comparison with the results of previous monitoring at the same salmon farm site;
  - b. Identification of any potential environmentally significant monitoring trends, at both the site and Big Glory Bay scales; and
  - c. Identification of any proposed additional monitoring, including the rationale for it, and the proposed scale, extent and timeframes involved.
  - d. An evaluation of the potential implications of the monitoring results from all salmon farming operations undertaken in Big Glory Bay by the consent holder on the environmental quality of Big Glory Bay;

Further revised draft – 9:30 am Friday 05 October 2018

**WITHOUT PREJUDICE FOR DISCUSSION PURPOSES**

- e. The extent to which the monitoring results indicate that farming practices may need to be adapted in order to address unforeseen environmental effects indicated by the monitoring results.

**Add the Following to the Review Condition of each Consent**

- e. Adding or amending conditions in order to address any matter raised in:
- i. The annual monitoring report insofar as it relates to Condition [X immediately above]; or
  - ii. The Technology Update Report required by Condition 5.

**Add the Following Condition to each Consent**

**Staging**

- YY. The total nitrogen input from feed used in Big Glory Bay between 1 July and 30 June each year shall not exceed 583 tonnes across all farms in Big Glory Bay, irrespective of ownership until:
- a. At least 1 July 2021; and
  - b. The total nitrogen in feed used in Big Glory Bay between 1 July and 30 June in each of three successive years has been at least 466 tonnes; and
  - c. A suitably qualified, experienced and independent person has confirmed, in writing that the increased input of nitrogen in feed will:
    - Not increase the average excess total ammonia nitrogen in Big Glory Bay by more than 30 µg/L at the surface of the water column, when compared with baseline data from the period July 2015 to December 2017; or
    - Not result in the annual median concentration of chlorophyll-a in the water column exceeding 3.5 µg/L at reference sites in Big Glory Bay (Tier One); or
    - Not result in the annual median concentration of chlorophyll-a in the water column at any site being greater than 5 µg/L (Tier Two); or
    - Not reduce the average dissolved oxygen saturation at any sampling point in the water column at any water quality site

Further revised draft – 9:30 am Friday 05 October 2018

WITHOUT PREJUDICE FOR DISCUSSION PURPOSES

below 70%; or

- Meet the following Environmental Quality Standards (EQS) for the seabed at the edge of the pens:
  - The benthic community has more than a few opportunistic species (i.e. Capitellid and Dorvillea worms, nematodes) present
  - No more than two replicate cores with no taxa (azoic). If any benthic sample contains a large number of mussel shells or the grab is prevented from closing due to the presence of mussel shells, the sample shall be retaken. In the event that three grab samples at any one location all contain a large number of mussel shells or the grab is prevented from closing due to the presence of mussel shells the sampling location shall be relocated approximately 10 metres distant.
  - No obvious, spontaneous out-gassing (H<sub>2</sub>S/methane)
  - Bacteria mat (*Beggiatoa*) coverage not greater than 50%;  
and
- d. Environment Southland certifies that the requirements of clause b and c of this condition have been satisfied.