# New Zealand Genetic Evaluation (NZGE) upgrade (V4) - 2022

## Technical Note

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| Subject: | **NZGE genotype inclusion criteria changes (Version 4)** |
| Relates to: | NZGE genomic breeding values, NZGE genotype inclusion |
| Date: | October 2022 – updated May 2023 |


## Summary

- The NZGE has been upgraded and the new version (V4) will be available in SIL and nProve from 29 October 2022.
- New genotype inclusion criteria based on breed, animal status, age, phenotype records and imputation accuracy will be applied in the upgrade.
- Adjustments were made to the Meat Yield and Methane genotype inclusion criteria in May 2023.
- The upgrade will include genotypes from pure bred Texels and Texel Composites (details below).


## Background

The New Zealand Genetic Evaluation (NZGE) has been upgraded to further improve the efficiency, reliability and scalability of the evaluation. The upgraded NZGE (V4) uses new breed, animal, phenotype and imputation criteria to determine which genotypes will be included in the evaluation.

Genotypes from Texel (≥ 75% Texel) and Texel Composite animals (>30% Texel and > 40% Romney, Coopworth or Perendale (or composite) background) will be included in the upgraded NZGE. The number of Texel and Texel Composite animals, particularly progeny tested sires, with both phenotype and genotype records have reached the point where their inclusion in the NZGE will increase the accuracy of the breeding values for the Texel animals and their non-Texel relatives, without reducing the accuracy for other breeds in the analysis.

## NZGE V4 genotype inclusion criteria

An animal must meet all the following genotype, breed, and pedigree criteria for its genotype to be included in the upgraded NZGE (V4).

**Genotype**

- The animal has a genotype loaded to SIL by a B+LNZ Genetics approved lab and,
- The genotype meets the genotype QC criteria.

**Breed**

- The animal has a SIL breed of ≥ 75% Texel, Romney, Coopworth or Perendale, or,
- The animal has a SIL breed of Composite with >30% Romney, Coopworth or Perendale, or,
- The animal has a SIL breed of Composite with >30% Texel *and* > 40% Romney, Coopworth or Perendale (or composite) background.

**Pedigree Status**

- The animal has at least one recorded or DNA assigned parent.

## Goal Trait Group records

Note - Genotype inclusion criteria are examined separately for each Goal Trait Group (GTG).

An animal's genotype will be included in the GTG analysis if the above Genotype, Breed and Pedigree Status criteria is met and:

- The animal is a sire or,
- The animal is a dam and is 6 or less years old or,
- The animal has a SIL status of Alive/transferred and is less than 2 years old (birth month of August is assumed i.e., in November of 2022 animals born in 2021 and 2022 will be included).
    - NB: Only genotypes from Alive/transferred animals 1 year old or less (born in 2022) will be included in the Meat Yield and Methane BV analyses, unless they meet the additional inclusion criteria.

**Additional Genotype Inclusions**

For animals that are not a sire, dam or young animal, some additional genotypes are included if they have informative phenotypes for production traits and/or expensive to record phenotypes, as detailed in Table 1. below.

*Table 1. Additional Goal Trait Group genotype inclusion criteria*

| Goal Trait Group (GTG) | Inclusion Criteria |
|---|---|
| Facial Eczema | GGT21 recorded |
| WormFEC | At least 2 of the following traits recorded: FEC1, NEM1, FEC2, NEM2 or AFEC |
| Resilience | DRAGE recorded |
| CarLA | CarLA recorded |
| Body Condition Score | BCS recorded |
| Methane | PACCH4 or PACCO2 recorded |
| Meat Yield | At least 3 of the following traits recorded: FDM, EMD, EMW, CTLEG, CTSHLD, CTLOIN, CTFAT, CWTC, CBUTT or any VIASCAN |
| Meat Quality | CMARB, SHF or COLA24 recorded |