

## Definition of Farm Economic Viability

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### Abstract

Economic viability is a key component of the National Policy Statement – Highly Productive Soils but is not defined within the legislation. Many consultants involved in rural subdivision issues use Economic Farm Surplus as a proxy, but EFS is a measure of farm profitability, which is not the same as economic viability. There have been a range of overseas research on defining farm economic viability. These are discussed in the paper, and a definition of economic viability for New Zealand is offered, which has direct implications for Councils endeavouring to interpret the NPS-HPL.

Key Words: NPS-HPL, economic viability

### The Issue

Under the recently released (2022) National Policy Statement – Highly Productive Land (NPS-HPL) it states in Section 3.10:

- (1) *Territorial authorities may only allow highly productive land to be subdivided, used, or developed for activities not otherwise enabled under clauses 3.7, 3.8, or 3.9 if satisfied that:*
  - (a) *There are permanent or long-term constraints on the land that mean the use of the highly productive land for land-based primary production is not able to be economically viable for at least 30 years.*

The issue that arises is that the term “economically viable” is not defined. In a number of cases before both Councils and the Environment Court, analyses based on Economic Farm Surplus (EFS) have been presented to show the profitability, or otherwise, of various alternative land uses.

EFS has been around for a long time and is a very useful standardised methodology of determining the profitability of a farming operation. But profitability is not the same as economic viability.

In a recent case it was stated that a positive EFS represents economic viability. I would disagree with this, as the quantum of the EFS is also very important. To take a hypothetical example; lets say landuse (a) has an EFS of \$500, and landuse (b) has an EFS of \$10,000. Both of them are positive, but the former cannot cover any other costs, while the latter can, to a limited degree. And both do not represent economic viability as will be explained in this paper.

### Calculation of EFS

There are a number of methodologies for calculating EFS, but the one I have used is:

EFS = Gross revenue less stock purchases less farm working expenses less depreciation less wages of management.

It is important to note that “wages of management” is an imputed cost recognising the managerial input of the owner, which is apart from any actual wages paid to the owner (which in most budgets or accounts is shown as “drawings”).

For a lifestyle operation therefore, an allowance should be made for the owner doing actual “stuff”, e.g. livestock work, repairs and maintenance, feeding supplement, etc, as opposed to the wages of management (around designing the system and making decisions), which is then additional to the wages. If an EFS is calculated which excludes an imputed wage of management, then it is not an EFS – in which case the next best alternative is to use Earnings before Interest, Tax, Depreciation, and Amortisation (EBITDA) instead.

The other key thing with EFS is that it assumes an unencumbered freehold property, so debt and debt servicing is ignored.

### **Economic Viability**

The Oxford Dictionary definition of viability as: *capable of working successfully; feasible. Where feasibility is the possibility and ability for something to be done. Viability is that something's ability to survive.*

The term “economically viable” is used to describe a project that provides an overall positive net economic contribution to society after all costs and benefits have been accounted for<sup>1</sup>.

The World Bank notes that *A project is economically viable if the economic benefits of the project exceed its economic costs, when analysed for society as a whole, and the economic costs of the project are not the same as its financial costs—externalities and environmental impacts should be considered*<sup>2</sup>.

To be economically viable, I would suggest that the income from the farm needs to be sufficient to cover:

- (i) Operating costs, e.g. wages, animal health, fertiliser, repairs and maintenance, etc
- (ii) Fixed costs such as rates, insurance, administration.
- (iii) Depreciation cost
- (iv) Living costs for the family
- (v) Debt servicing and debt repayment
- (vi) A surplus then available for the future development of the farm business

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[https://www.google.com/search?q=economically+viable&rlz=1C1ONGR\\_enNZ1049NZ1049&oq=economically+viable&gs\\_lcrp=EgZjaHJvbWUyCQgAEEUYORiABDIHCAEQABiABDIHCAIQABiABDIHCAMQABiABDIHCAQQABiABDIHCAUQABiABDIHCAYQABiABDIHCACQABiABDIHCAgQABiABDIHCAkQABiABNIBCTMwNDJqMGoxNagCALACAA&sourceid=chrome&ie=UTF-8](https://www.google.com/search?q=economically+viable&rlz=1C1ONGR_enNZ1049NZ1049&oq=economically+viable&gs_lcrp=EgZjaHJvbWUyCQgAEEUYORiABDIHCAEQABiABDIHCAIQABiABDIHCAMQABiABDIHCAQQABiABDIHCAUQABiABDIHCAYQABiABDIHCACQABiABDIHCAgQABiABDIHCAkQABiABNIBCTMwNDJqMGoxNagCALACAA&sourceid=chrome&ie=UTF-8)

<sup>2</sup> <https://ppp.worldbank.org/public-private-partnership/assessing-project-feasibility-and-economic-viability#:~:text=A%20project%20is%20economically%20viable,environmental%20impacts%20should%20be%20considered.>

All of which would suggest that economic viability is much more complex than a simple EFS. Michigan State University has noted<sup>3</sup>: *Economic viability is a necessary condition for sustainable agricultural and food systems. Profitability is a good place to begin. Evaluating the likely profitability of potentially more sustainable practices can start with budgeting. But economic viability is about more than profitability.*

## Overseas Research

There have been several papers written on this topic, particularly in the United States and Europe, with a range of definitions as to what economic viability is.

Savickiene et al (2015) noted that *the economic viability of a farm is its capability to survive (ie income > costs), live, and develop by using the available resources, and that the main goal of any farmers' farm is not only production of the amount of agricultural and food products to satisfy the family's needs, but also generation of sufficient income to ensure a normal standard of living for the family and further development of the anticipated activity.*

Other definitions of farm economic viability include:

**Table 1: Definitions of Farm Economic Viability**

Location	Reference	Definition of viability
USA	Smale <i>et al.</i> (1986)	A level of annual cash income sufficient to cover farm operating costs, meet the household's minimum consumption needs, replace capital items at a rate that ensures constant serviceability of the capital stock, and finance loan retirement as scheduled.
USA	Salant et al (1986)	Considered viability as achieved where the "farm household that receives enough income from all sources to cover minimum family living expenses, cash farm operating costs and capital replacement costs at the same time as it improves its net worth by making scheduled principal payments on its debt.
Ireland	Frawley and Commins (1996)	A viable farm (is described) as one having (a) the capacity to remunerate family labour at the average agricultural wage, and (b) the capability to give an additional 5 per cent return on non-land assets.
USA	Adelaja <i>et al.</i> (2004)	A farm is defined as economically viable when it generates enough revenue from its operations to cover all variable and fixed costs of production, all appropriate family living expenses, and capital replacement costs.
Ireland	Hennessy <i>et al.</i> (2008)	An economically viable farm is defined as one having (a) the capacity to remunerate unpaid family labour at the average agricultural wage; and (b) the capacity to provide an additional 5 per cent return on non-land assets – these include the capital value of machinery, livestock and production quotas.

Source: in O'Donoghue et al 2016

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[https://www.canr.msu.edu/afre/centers\\_services/economic\\_analysis\\_of\\_sustainable\\_ag\\_food\\_systems/index#:~:text=Economic%20viability%20is%20a%20necessary,is%20about%20more%20than%20profitability.](https://www.canr.msu.edu/afre/centers_services/economic_analysis_of_sustainable_ag_food_systems/index#:~:text=Economic%20viability%20is%20a%20necessary,is%20about%20more%20than%20profitability.)

Essentially, most of these are (a) allowing for a living allowance for the family, (b) a return on capital tied up in non-land assets (i.e. livestock and plant and equipment), and (c) a number are also including debt repayment.

The Europeans have developed a Farm Economic Viability (FEV) indicator (in Hloušková et al 2022), with the formula of:

$$FEV = \frac{FNVA - RP - (IP + OCC)}{W + OCL}$$

Where:

FEV = Farm Economic Viability

FNVA = Farm net value added (Gross Revenue less depreciation)

RP = Rent Paid

IP = interest paid

OCC = Opportunity cost of capital (including land)

W = Wages

OCL = opportunity cost of labour

Under this approach, if FEV is greater than 1, then the farm is economically viable.

Again, the interesting thing from this approach is the inclusion of debt servicing and an opportunity cost of capital which includes the land value.

Savickiene et al (2015) includes a list of methodologies used by various researchers to determine economic viability as shown in Table 2.

**Table 2: Methodologies on assessment of farm economic viability (in descending usage)**

Return on equity: farm net value added / equity
Return on Assets: farm net value added / assets
Operating expense ratio: expense / total output at basic prices
Current ratio: current farm assets / current farm liabilities
Debt to assets: total farm liability / total farm assets
Gross margin: farm gross value added / total output at basic prices
Asset turnover ratio: total output at basic prices / total assets
Labour productivity: Farm net value added / annual work unit (AWU)
Land productivity: Farm net value added / hectare of UAA
Debt to total output ratio: debt / total output at basic prices
Depreciation expense ratio: expense / total output at basic prices

Spicka et al, 2019 note with respect to these indices that, *one of the most significant problems of financial ratios is a purely accounting perspective which does not consider the opportunity cost of own land, labour and capital. Authors suggest that viability assessment through financial indicators is rather financial viability than economic viability because it does not consider productivity and opportunity costs.*

In an economic sense it could be argued that the best means of determining economic viability would be a cost/benefit analysis – if the NPV is positive and the IRR is greater than the cost of capital, then it is viable.

Perhaps the key finding from all this work is that there is no set definition of farm economic viability, but it does provide pointers as to what could possibly be included in a New Zealand methodology.

### **The Question of Debt**

While several of the definitions noted above include an allowance for debt servicing/debt repayment, as a generalisation, the level of debt (and attendant debt servicing) is usually ignored in comparisons of farm profitability in New Zealand. This is largely on the basis that debt is a personal factor, which varies depending on the individual circumstances of the farmer.

With reference to small blocks/lifestyle units, the inclusion of debt in any profitability or economic viability assessment becomes even more problematic, as the level of debt usually bears no relationship to the productive capacity of the block. This is particularly so as lifestyle blocks are purchased for a variety of reasons well outside of agricultural production, and the market price reflects this.

While there is an argument to include a debt allowance in the analysis of economic viability of a commercial farm, the same issue highlighted just above also applies. Namely that the market value of the land and buildings also usually does not relate well to its productive capacity.

I would therefore suggest that in an analysis of economic viability, especially for small/lifestyle blocks, an allowance for a level of debt/debt servicing should be ignored.

### **Providing a Living for the Family**

Most of the definitions of farm economic viability include covering the costs of living for the family. I would contend that this is a prerequisite component of any analysis of farm economic viability.

The question which then arises is how to determine the quantum of this “living allowance”. There are a number of potential indices:

- The mean family income in New Zealand in 2023 was \$127,423<sup>4</sup>
- The median family income in New Zealand for 2023 was \$115,200<sup>5</sup>
- The average annual salary as of June 2023 was \$70,069<sup>6</sup>

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<sup>4</sup> [https://ecoprofile.infometrics.co.nz/auckland/StandardOfLiving/Household\\_Income](https://ecoprofile.infometrics.co.nz/auckland/StandardOfLiving/Household_Income)

<sup>5</sup> <https://webrear.mbie.govt.nz/theme/household-income-median/map/timeseries/2023/new-zealand?accessedvia=new-zealand&right-transform=absolute>

<sup>6</sup> <https://www.newshub.co.nz/home/money/2023/07/new-zealand-s-average-salary-cracks-70-000-reaching-record-high-trade-me.html>

- The median annual wage as of June 2023 was \$66,196<sup>7</sup>

Possibly a better approach would be to consider a minimum allowance figure to use as a base, given that the cost of living for a family is again a somewhat personal expense.

I would suggest the following formula: minimum wage x average hours worked per year.

As of February 2024, the minimum wage was \$23.15/hour, and average hours worked per week was 40 (although this is starting to reduce)<sup>8</sup>, with 45.8 weeks worked per year (allowing for 4 weeks holiday and 11 statutory days)<sup>9</sup>. The calculation therefore is  $23.15 \times 40 \times 45.8 = \$42,411$  per year.

If the median wage of \$31.61/hour is used, the resultant total is \$57,910/year.

Whether an allowance of \$42,400 is sufficient to provide a living for a family is moot, particularly relative to the annual figures noted above, but is used to define a minimum allowance.

## Return on Capital

Again, many of the definitions of farm economic viability include an allowance for the opportunity cost of capital. This is particularly for “operating capital” (i.e. capital tied up in livestock and plant and equipment) with some also including an allowance for capital tied up in the land.

I would contend that the value of land be excluded from any calculation of economic viability. The key reason behind this is that the value of farmland in New Zealand bears only a very modest relationship with the productive capacity of the land (Journeaux, 2017), and that the value of small/lifestyle blocks bears no relationship with productive capacity. Including an opportunity cost against the value of the land would therefore distort any analysis.

An opportunity cost against operating capital though, is a valid cost that needs to be considered. The question that then arises is what discount rate to use.

The average rate of return from sheep & beef farming over the last 14 years is 1.2%<sup>10</sup>, and for dairying 4.1%<sup>11</sup>. Over the last 5 years the figures are 1.1% and 2.8% respectively. I would suggest that these types of average rates of return not be used, for 2 reasons:

- (i) They are quite low, a direct reflection of poor profitability combined with over-valued land prices relative to productive capacity, and
- (ii) They obviously vary between the sectors, whereas a more standardised figure is required.

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<sup>7</sup> <https://www.stats.govt.nz/news/income-growth-for-wage-and-salary-earners-remains-strong/#:~:text=In%20the%20year%20to%20the%20June%202023%20quarter%2C%20median%20hourly,increase%20in%20the%20previous%20year.>

<sup>8</sup> <https://www.stats.govt.nz/news/8-hour-workday-remains-commonplace-in-new-zealand/>

<sup>9</sup> Equates to 1,832 hours per year.

<sup>10</sup> Beef+Lamb NZ Economic Service Surveys

<sup>11</sup> Dairy NZ Economic Surveys

Other potential standardised discount rates are:

- The 5 or 10-year bond rate
- Reserve Bank OCR
- 5-year fixed mortgage rate
- Treasury discount rate for cost/benefit analysis

Of these, the one I would tend to favour is the Treasury discount rate for cost/benefit analysis<sup>12</sup>, which in itself is a proxy for average interest rates within New Zealand and is presented as a “risk-free” rate. It also does not vary as much as the other indices noted above. The calculation therefore would be: operating capital x Treasury discount rate (currently 5%).

It could be expected that for small/lifestyle blocks, the level of operating capital would be relatively small.

### **Definition of Economic Viability**

Drawing all this together as to an analysis of farm economic viability in New Zealand, I would suggest this includes:

- (i) Gross farm revenue, less
- (ii) Operating costs
- (iii) Fixed costs
- (iv) Depreciation
- (v) A living allowance for the family
- (vi) An opportunity cost of operating capital

The easiest way to calculate (i) – (iv) is to calculate an EFS, so essentially the analysis becomes:

EFS less living allowance less opportunity cost of operating capital.

At a personal level, an analysis of economic viability could well include debt and return on land capital, but not for a generic analysis.

### **Economic Sustainability**

A difference is drawn in the literature between economic viability and economic sustainability. Hennessy et al (2008) note that *Farms that are not economically viable may be economically sustainable due to the off-farm income of the household members*. I would contend that this accurately reflects the vast majority of small/lifestyle blocks in New Zealand – they are not economically viable, but they are economically sustainable because of the off-farm income being brought in by the owners.

### **NPS-HPL**

Coming back to the NPS-HPL, and its requirement that subdivision is only possible if *there are permanent or long-term constraints on the land that mean the use of the highly*

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<sup>12</sup> <https://www.treasury.govt.nz/information-and-services/state-sector-leadership/guidance/reporting-financial/discount-rates>

*productive land for land-based primary production is not able to be economically viable for at least 30 years.*

The situation is:

- (i) EFS is a good, standardised methodology to determine farm profitability. But an EFS in itself is not a measure of farm economic viability – it is just part of the analysis.
- (ii) Most small/lifestyle blocks are productive<sup>13</sup>, and most would cover their operating costs. But relatively few would also cover their fixed costs, and even fewer would show a positive EFS. In stating this, size of block plays an important role (i.e. economies of scale) – the larger the block the greater the probability of a positive EFS.
- (iii) But virtually none could be considered economically viable, and this situation is very unlikely to change over the next 30 years. [By definition, a lifestyle block is not economically viable – otherwise it would be a commercial farm or orchard]. A few thousand dollars either way on an EFS does not alter this basic fact.
- (iv) While most small blocks are not economically viable, most are economically sustainable, under the definitions given above.

To give a hypothetical example:

The 5-year average EFS for the Beef+Lamb NZ Economic Service North Island Intensive Finishing Farm (Class 5) is \$469/ha. Allowing for a 5% opportunity cost against operating capital reduces this to \$346/ha. The minimum size of a unit to then cover the required minimum living allowance, would be 123ha. [If the median family income is used as the definition of a living allowance, then the size of the block rises to 333 ha.] In other words, any sheep & beef farm under 123 ha could be subdivided as it is already not economically viable. In other words, the large block is productive but not economically viable. Subdividing this into smaller blocks does not change this equation.

Overall, therefore, Clause 3.10 (1)(a) of the NPS-HPL is untenable.

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<sup>13</sup> It is important to note that productivity and economic viability are also very different. Many Councils regard small blocks as uneconomic (which they are) and hence unproductive (which they are not).



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