



# Ku-ring-gai BFPL Map Update

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**Ku-ring-gai Council**

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## DOCUMENT TRACKING

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Template 2.8.1

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## 1. Introduction

Section 10.3 of the *Environmental Planning and Assessment Act 1979* (EP&A Act) prescribes a requirement for Councils to map bushfire prone land (BFPL) where the land is covered by a bushfire risk management plan (as per Part 3 Division 5 of the *Rural Fires Act 1997*). The maps are required to be submitted to the NSW Rural Fire Service (RFS) for certification by the Commissioner of the RFS. These maps must be reviewed every five years and prepared according to specifications detailed within the document '*Guide for Bush Fire Prone Land Mapping*' (RFS 2015). This is to ensure legibility, to establish consistency across NSW and to assist in creating a more streamlined system for planning for bush fire protection.

The BFPL map is the trigger for consideration of bush fire protection measures for developments and calls up *Planning for Bushfire Protection and Australian Standard 3959-2009 – Construction of buildings in bush fire prone areas*. Councils have a responsibility to record a BFPL map, in consultation with, and for certification by the Commissioner of the RFS. The RFS has published a guideline and methodology to assist Council's fulfil this responsibility (RFS 2015).

Eco Logical Australia (ELA) was engaged by Ku-ring-gai Council to update the BFPL map for the Ku-ring-gai Local Government Area (LGA). ELA reviewed the existing BFPL map, to ensure that the extent and categorisation of mapped BFPL is accurate, current, and consistent with the RFS guidelines. The update included evaluation of vegetation extent, condition and management. This included areas of recent or potential revegetation and consideration of other factors that may warrant exclusion of vegetation from the mapping or downgrade of vegetation to Category 2, or inclusion of Category 3 vegetation.

This report details the method undertaken and results of the updated BFPL mapping.

## 2. Bush Fire Prone Land Mapping Update

Ku-ring-gai LGA is situated in the north of the greater Sydney area and features a mix of mostly residential suburban areas and large and small conservation estates. The LGA has an extensive hazard interface, with Ku-ring-gai Chase National Park to the North, Garigal National Park to the East, and Lane Cove National Park to the South-West. Additionally, there are various smaller bushland reserves throughout the LGA, predominantly following waterways and valleys branching out from the National Parks.

### 2.1 Prescriptive Assignment and Exclusion of Bush Fire Prone Vegetation

The RFS guidelines define vegetation formations and patch characteristics (area, shape and either proximity or separation from other BFPV) that conform to BFPV categories or which may be excluded from the BFPV dataset and mapping. These rules are detailed in Table 1.

**Table 1: Rules for Determining Vegetation Categories (adapted from RFS 2015)**

Category	Vegetation Type	Size (ha)
Vegetation Category 1	Forest, woodlands, heaths (tall and short), forested wetlands and timber plantations	>= 1 ha or < 1 ha when within 100m of other bush fire prone vegetation
Vegetation Category 2	<p>Rainforests.</p> <p>Lower risk vegetation parcels. These vegetation parcels represent a lower bush fire risk to surrounding development and consist of:</p> <ul style="list-style-type: none"> <li>› Remnant vegetation;</li> <li>› Land with ongoing land management practices that actively reduces bush fire risk. These areas must be subject to a plan of management or similar that demonstrates that the risk of bush fire is offset by strategies that reduce bush fire risk; AND include: <ul style="list-style-type: none"> <li>› Discrete urban reserve/s;</li> <li>› Parcels that are isolated from larger uninterrupted tracts of vegetation and known fire paths;</li> <li>› Shapes and topographies which do not permit significant upslope fire runs towards development;</li> <li>› Suitable access and adequate infrastructure to support suppression by firefighters;</li> <li>› Vegetation that represents a lower likelihood of ignitions because the vegetation is surrounded by development in such a way that an ignition in any part of the vegetation has a higher likelihood of detection.</li> </ul> </li> </ul>	<p>Rainforest: any size</p> <p>Lower risk vegetation: &lt;1 ha or &lt;2.5 ha when &gt;100m from other BFPV.</p>
Vegetation Category 3	Grasslands, freshwater wetlands, semi-arid woodlands, arid shrublands.	>= 1 ha or < 1 ha when within 100m of other bush fire prone vegetation

Certain types of vegetation are excluded from the above categories (as per RFS 2015). These include:

- Single areas of vegetation less than 1 hectare in area and greater than 100 metres separation from other areas of Category 1, 2 or 3 vegetation;
- Multiple areas of vegetation less than 0.25 hectares in area and not within 30 metres of each other;
- Strips of vegetation less than 20 metres in width, regardless of length and not within 20 metres of other areas of Category 1, 2 or 3 vegetation (long connected fingers are excluded 20m from the point that vegetation widens);
- Areas of “managed grassland” including grassland on, but not limited to, recreational areas, commercial/industrial land, residential land, airports/airstrips, maintained public reserves and parklands, commercial nurseries and the like;
- Areas of managed gardens and lawns within curtilage of buildings;
- Non-vegetated areas, including waterways, roads, footpaths, buildings and rocky outcrops.
- Managed botanical gardens;
- Agricultural lands used for annual and/or perennial cropping, orchard, market gardens, nurseries and the likes are excluded;
- Saline wetlands including mangroves.

## 2.2 Mapping Approach

This section describes the mapping approach taken with this project. Vegetation mapping updated for Ku-ring-gai Council in 2020 was used as a base vegetation dataset, as it offered the best coverage across the LGA. Secondary datasets were incorporated with the base dataset where relevant and then the dataset was updated spatially and then assessed against the RFS guidelines.

The spatial extent of mapped vegetation was adjusted on the basis of aerial photograph interpretation (API) to identify non-vegetated areas or areas of canopy devoid of understorey vegetation (such as in public recreation areas), or within which canopy was managed (such as mown grass, curated gardens, etc). API was undertaken on standard desktop computer monitors at a scale of 1:5,000 and using the latest Near Map Imagery available. Other GIS reference data such as waterways mapping, cadastral and reserve boundaries were used to assist decision making during the API.

Following spatial extent updating, review against the RFS guidelines was undertaken to ensure appropriate classification of vegetation category. Patch size and vegetation formation were interrogated based on the attributes of vegetation polygons, calculated areas of vegetation patches (which may comprise multiple adjoining vegetation polygons), while patch width was considered on a case-by-case basis. Vegetation extent was defined by the estimated limit of unmanaged groundcover, which may be less than the canopy extent. Vegetation exclusions were assessed iteratively such that non-vegetated or managed vegetation polygons were delineated and excluded, then remaining vegetation was assessed against width and area thresholds.

Targeted field validation was undertaken to validate priority areas identified by Council, along the residential interface with areas of bushfire hazard. Key to

## 2.3 Field Validation Sites

Field validation was undertaken over two days across the LGA, undertaken by ELA Principal Bushfire Consultant, Nathan Kearnes (BPAD L3 Accredited Assessor), accompanied by Mark Schuster, Strategic

Bushfire Officer, Ku-ring-gai Council. The locations of sites visited are identified in Figure 1 and locations provided in Table 2, along with commentary related to site observations and proposed revisions.

The key purpose of undertaking sites visits was to:

- Confirm vegetation structure and fuel characteristics, particularly in areas where vegetation was noted as highly mesic,
- Review the size and extent of patches, particularly in relation to Category 2 guidelines and exclusion requirements as per 7.1.1 and 7.1.2 of the Guideline (RFS, 2015);
- Verify vegetation management and clearing.

**Table 2: Field Validation Sites**

Map ID	Address	ELA Comment
1	Ku-ring-gai Flying Fox Reserve	Change to Category 2: Vegetation is highly mesic with rainforest structure and fuel characteristics, south and east facing. Category 2 from Rosedale Rd east to a line from the junction of Nelson and Bell Streets extending across stony creek to the northern side
2	49 Nelson Street, Killara	Change to Category 2: Small patch, disconnected from larger patch, with mesic understorey and notable disturbance.
3	24 Chisholm Street South Turramurra	Review extent for application of Category 2. Minor extension of current extent to NE
4	93-137 Merrivale Lane, Pymble	Review extent (width or size) for exclusion as per 7.1.2
5	Minns/Glenview/RosedaleTaylor, Gordon	Change to Category 2: Vegetation is highly mesic with rainforest structure and fuel characteristics
6	Malga Avenue West, Griffith Ave, East Roseville	Retain as Category 2
7	Allard Reserve, East Roseville	Retain as Category 2
8	Boatshed Reserve, East Roseville	Change to Category 2 - short fire run, with limited connectivity, mesic vegetation and disturbed under storey.
9	Barra Brui Playing Field, St Ives	Canopy continuance with larger patch to the east. Drier ignitable vegetation, cannot be prescriptively downgraded, retain as Category 1.
10	1-31 Alexander Pd, Roseville	Change to Category 2. South facing, thin canopy with highly mesic understorey and narrow connection; Refine extent using aerials to exclude houses
11	Pymble Golf Club (western edge)	Exclude - managed land
12	100 Eton Road Lindfield & adjacent National Park edge	Refine the extent based on recent clearing using latest aerial photo. Retain as Category 1. Refine the protrusion near Eton and Abingdon Rd junction.
13	5-7 Dunstan Grove Lindfield	Refine the extent based on recent clearing using latest aerial photo. Retain as Category 1
14	6-8 Shout Ridge Lindfield	Refine the extent based on recent clearing using latest aerial photo. Retain as Category 1.
15	18-30 Graiglands St, Pymble	Change to Category 2. Highly mesic vegetation with rainforest like structure and fuel characteristics, south facing.
16	47-51 Amaroo & 34-38 Minnamurra, Pymble	Retain as Category 2, check recent aerial to refine extent. Protruding fingers of Category 1 can be downgraded to Category 2.
17	Upper Minnamurra Reserve & Blackbutt Reserve, Pymble	Retain as Category 2, check recent aerial to refine extent. Protruding fingers of Category 1 can be downgraded to Category 2.
18	12-38 Killeaton & 7-12 Caringal, St Ives	Retain as Category 2

Map ID	Address	ELA Comment
19	Bedes Forest - 29 College Crescent, St Ives	Exclude west of Yarrabong Road; managed understorey
20	Moores Creek between Amarna Parade and Luxor Parade	Retain as Category 2
21	140-152 Coonabarra S, Nth Wahroonga	Not visited. Recent clearing easily observable on aerial photo. Exclude cleared area and refine extent of remaining BFPV, as Category 2.



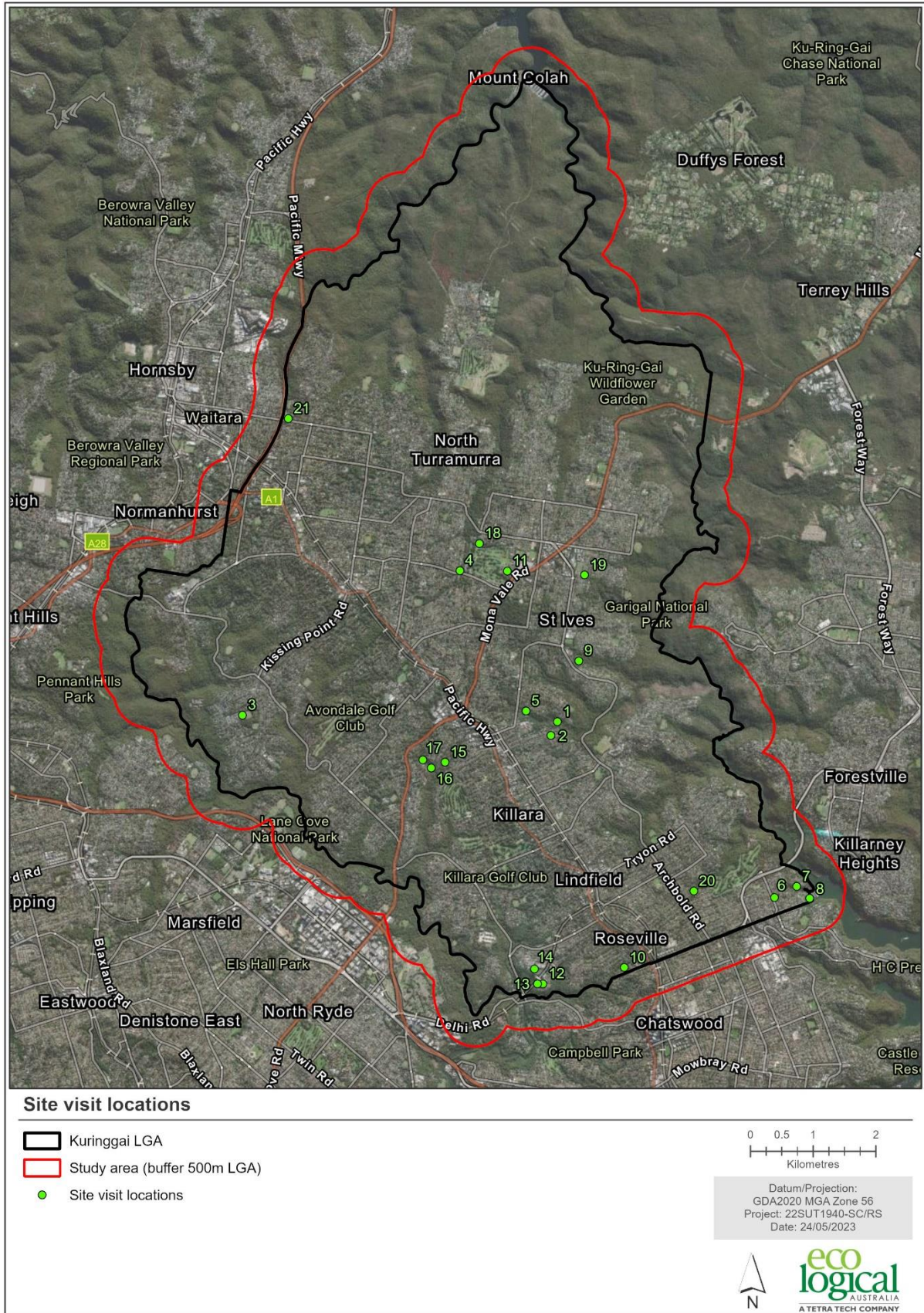


Figure 1: Site Visit Locations

### 3. Results and Change Analysis

The results of the BFPV update are displayed in Figure 2. Analysis of the dataset against the existing BFPV dataset reveals just on 50 hectares of Vegetation Category 1, 2 or 3 were added to the BFPV dataset, with approximately 24.5 hectares removed (Table 3).

To calculate the change, the updated BFPV was unioned with the original dataset for the purpose of evaluating areas of change. This produced a dataset with a field designating the type of update made (if any). Changes are evident in Figure 2 and summarised in Table 3. Changes included:

- No Change - These areas were mapped as BFPV in both the original and updated datasets. These areas contained the same vegetation category in both datasets.
- Removed - These are areas that were mapped as BFPV in the original dataset and have been removed as part of this update.
- Added - These are areas that were not mapped as BFPV in the original dataset and have been added as part of this update
- Changed Category – These are areas where the new BFPV extent was unchanged, however the category was updated.

**Table 3: Comparison of BFPV update to existing mapping**

Existing BFPV	BFPV Update (ha)			
	Removed in BFPV update	Category 1	Category 2	Category 3
Not in old BFPV		9.67	12.53	0.04
Vegetation Category 1	8.00	2975.77	61.09	1.58
Vegetation Category 2	7.56	2.11	64.54	0.00
<b>Total</b>	15.56	2987.55	138.16	1.62

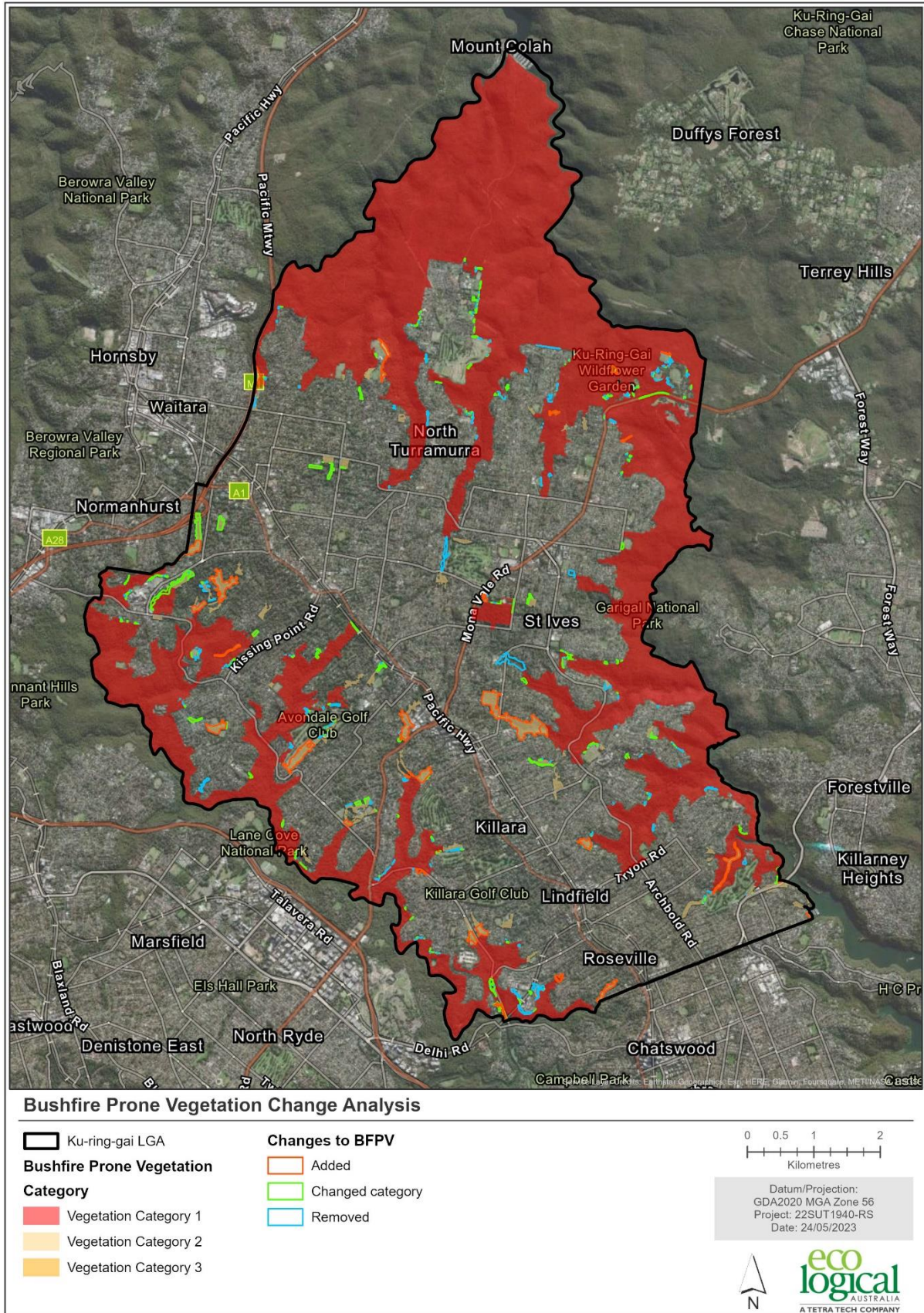


Figure 2: Bushfire Prone Vegetation Change Analysis

## 4. Conclusions

Eco Logical Australia has updated Councils BFPV dataset in line with the updated RFS guideline (RFS 2015). The next step in the process for formal certification is to submit the BFPV dataset to the RFS following Section 8 of the RFS guidelines.

