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INTERNATIONAL UNION FOR THE PROTECTION OF NEW VARIETIES OF PLANTS

GENEVA

GARDEN ROCKET

UPOV Code: ERUCA_SAT

Eruca sativa Mill.

*

GUIDELINES

FOR THE CONDUCT OF TESTS

FOR DISTINCTNESS, UNIFORMITY AND STABILITY

Alternative Names:*

Botanical name	*English*	*French*	*German*	*Spanish*
Eruca sativa Mill.	Arugula, Cultivated Rocket, Garden Rocket, Rocket-salad, Rugula, Salad Rocket	Roquette cultivée	Ölrauke, Rauke, Ruke, Rukola, Senfrauke	Oruga común, Roqueta

The purpose of these guidelines ("Test Guidelines") is to elaborate the principles contained in the General Introduction (document TG/1/3), and its associated TGP documents, into detailed practical guidance for the harmonized examination of distinctness, uniformity and stability (DUS) and, in particular, to identify appropriate characteristics for the examination of DUS and production of harmonized variety descriptions.

ASSOCIATED DOCUMENTS

These Test Guidelines should be read in conjunction with the General Introduction and its associated TGP documents.

Other associated UPOV documents: TG/244/1 Rev.: Test Guidelines for Wild Rocket

* These names were correct at the time of the introduction of these Test Guidelines but may be revised or updated. [Readers are advised to consult the UPOV Code, which can be found on the UPOV Website (www.upov.int), for the latest information.]

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1. Subject of these Test Guidelines

These Test Guidelines apply to all varieties of *Eruca sativa* Mill.

2. Material Required

2.1 The competent authorities decide on the quantity and quality of the plant material required for testing the variety and when and where it is to be delivered. Applicants submitting material from a State other than that in which the testing takes place must ensure that all customs formalities and phytosanitary requirements are complied with.

2.2 The material is to be supplied in the form of seed.

2.3 The minimum quantity of plant material, to be supplied by the applicant, should be:

25 g or 15 000 seeds.

The seed should meet the minimum requirements for germination, species and analytical purity, health and moisture content, specified by the competent authority. In cases where the seed is to be stored, the germination capacity should be as high as possible and should, be stated by the applicant.

2.4 The plant material supplied should be visibly healthy, not lacking in vigor, nor affected by any important pest or disease.

2.5 The plant material should not have undergone any treatment which would affect the expression of the characteristics of the variety, unless the competent authorities allow or request such treatment. If it has been treated, full details of the treatment must be given.

3. Method of Examination

3.1 Number of Growing Cycles

The minimum duration of tests should normally be two independent growing cycles.

3.2 Testing Place

Tests are normally conducted at one place. In the case of tests conducted at more than one place, guidance is provided in TGP/9 “Examining Distinctness”.

3.3 Conditions for Conducting the Examination

3.3.1 The tests should be carried out under conditions ensuring satisfactory growth for the expression of the relevant characteristics of the variety and for the conduct of the examination.

3.3.2 The recommended method of observing the characteristic is indicated by the following key in the second column of the Table of Characteristics:

MG: single measurement of a group of plants or parts of plants
MS: measurement of a number of individual plants or parts of plants
VG: visual assessment by a single observation of a group of plants or parts of plants
VS: visual assessment by observation of individual plants or parts of plants

3.4 Test Design

3.4.1 Each test should be designed to result in a total of at least 60 plants, which should be divided between two or more replicates.

3.4.2 The design of the tests should be such that plants or parts of plants may be removed for measurement or counting without prejudice to the observations which must be made up to the end of the growing cycle.

3.5 Number of Plants / Parts of Plants to be Examined

Unless otherwise indicated, all observations on single plants should be made on 20 plants or parts taken from each of 20 plants and any other observations made on all plants in the test."

3.6 Additional Tests

Additional tests, for examining relevant characteristics, may be established.

4. Assessment of Distinctness, Uniformity and Stability

4.1 Distinctness

4.1.1 General Recommendations

It is of particular importance for users of these Test Guidelines to consult the General Introduction prior to making decisions regarding distinctness. However, the following points are provided for elaboration or emphasis in these Test Guidelines.

4.1.2 Consistent Differences

The differences observed between varieties may be so clear that more than one growing cycle is not necessary. In addition, in some circumstances, the influence of the environment is not such that more than a single growing cycle is required to provide assurance that the differences observed between varieties are sufficiently consistent. One means of ensuring that a difference in a characteristic, observed in a growing trial, is sufficiently consistent is to examine the characteristic in at least two independent growing cycles.

4.1.3 Clear Differences

Determining whether a difference between two varieties is clear depends on many factors, and should consider, in particular, the type of expression of the characteristic being examined, i.e. whether it is expressed in a qualitative, quantitative, or pseudo-qualitative manner. Therefore, it is important that users of these Test Guidelines are familiar with the recommendations contained in the General Introduction prior to making decisions regarding distinctness.

4.2 Uniformity

4.2.1 It is of particular importance for users of these Test Guidelines to consult the General Introduction prior to making decisions regarding uniformity. However, the following points are provided for elaboration or emphasis in these Test Guidelines:

4.2.2 The assessment of uniformity should be according to the recommendations for cross-pollinated varieties in the General Introduction.

4.3 Stability

4.3.1 In practice, it is not usual to perform tests of stability that produce results as certain as those of the testing of distinctness and uniformity. However, experience has demonstrated that, for many types of variety, when a variety has been shown to be uniform, it can also be considered to be stable.

4.3.2 Where appropriate, or in cases of doubt, stability may be tested, either by growing a further generation, or by testing a new seed stock to ensure that it exhibits the same characteristics as those shown by the previous material supplied.

5. Grouping of Varieties and Organization of the Growing Trial

5.1 The selection of varieties of common knowledge to be grown in the trial with the candidate varieties and the way in which these varieties are divided into groups to facilitate the assessment of distinctness are aided by the use of grouping characteristics.

5.2 Grouping characteristics are those in which the documented states of expression, even where produced at different locations, can be used, either individually or in combination with other such characteristics: (a) to select varieties of common knowledge that can be excluded from the growing trial used for examination of distinctness; and (b) to organize the growing trial so that similar varieties are grouped together.

5.3 The following have been agreed as useful grouping characteristics:

a) Leaf: anthocyanin coloration of veins (characteristic 4)
b) Leaf: length (characteristic 5)
c) Leaf: width (characteristic 6)
d) Leaf: division (characteristic 7)
e) Leaf: secondary lobing (characteristic 9)
f) Flower: color of petals (characteristic 14)

5.4 Guidance for the use of grouping characteristics, in the process of examining distinctness, is provided through the General Introduction.

6. Introduction to the Table of Characteristics

6.1 Categories of Characteristics

6.1.1 Standard Test Guidelines Characteristics

Standard Test Guidelines characteristics are those which are approved by UPOV for examination of DUS and from which members of the Union can select those suitable for their particular circumstances.

6.1.2 Asterisked Characteristics

Asterisked characteristics (denoted by *) are those included in the Test Guidelines which are important for the international harmonization of variety descriptions and should always be examined for DUS and included in the variety description by all members of the Union, except when the state of expression of a preceding characteristic or regional environmental conditions render this inappropriate.

6.2 States of Expression and Corresponding Notes

States of expression are given for each characteristic to define the characteristic and to harmonize descriptions. Each state of expression is allocated a corresponding numerical note for ease of recording of data and for the production and exchange of the description.

6.3 Types of Expression

An explanation of the types of expression of characteristics (qualitative, quantitative and pseudo-qualitative) is provided in the General Introduction.

6.4 Example Varieties

Where appropriate, example varieties are provided to clarify the states of expression of each characteristic.

6.5 Legend

(*) Asterisked characteristic – see Chapter 6.1.2
QL: Qualitative characteristic – see Chapter 6.3
QN: Quantitative characteristic – see Chapter 6.3
PQ: Pseudo-qualitative characteristic – see Chapter 6.3

MG, MS, VG, VS: See Chapter 3.3.2

(a) See Explanations on the Table of Characteristics in Chapter 8.1

(+) See Explanations on the Table of Characteristics in Chapter 8.2

7. Table of Characteristics/Tableau des caractères/Merkmalstabelle/Tabla de caracteres

		English	français	Deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
1.	**VG**	**Leaf: attitude**	**Feuille : port**	**Blatt: Haltung**	**Hoja: porte**		
QN	**(a)**	erect	dressé	aufrecht	erecto	Runway, Sky Rocket	1
		semi erect	demi dressé	halbaufrecht	semi erecto	Myway	3
		horizontal	horizontal	waagerecht	horizontal	Highway	5
2. (*)	**VG**	**Leaf: color of blade**	**Feuille : couleur du limbe**	**Blatt: Farbe der Spreite**	**Hoja: color del limbo**		
QL	**(a)**	yellow green	vert jaune	gelbgrün	verde amarillento	Highway, Runway	1
		green	vert	grün	verde	Myway	2
3.	**VG**	**Leaf: intensity of color**	**Feuile: intensité de la couleur**	**Blatt: Intensität der Farbe**	**Hoja: intensidad del color**		
QN	**(a)**	light	claire	hell	claro		3
		medium	moyenne	mittel	medio		5
		dark	foncée	dunkel	oscuro		7
4. (*)	**VG**	**Leaf: anthocyanin coloration of veins**	**Feuille: pigmentation anthocyanique des nervures**	**Blatt: Anthocyanfärbung der Adern**	**Hoja: pigmentación antociánica de los nervios**		
QL	**(a)**	absent	absente	fehlend	ausente	Astro, Flash, Rococo	1
		present	présente	vorhanden	presente	Fireworks, Sweet Intensity,	9
5. (*) (+)	**VG/ MS**	**Leaf: length**	**Feuille: longueur**	**Blatt: Länge**	**Hoja: longitud**		
QN	**(a)**	short	courte	kurz	corta	Rococo	3
		medium	moyenne	mittel	media	Myway	5
		long	longue	lang	larga	Runway	7
6. (*)	**VG/ MS**	**Leaf: width**	**Feuille: largeur**	**Blatt: Breite**	**Hoja: anchura**		
QN	**(a)**	narrow	étroit	schmal	estrecha		3
		medium	moyenne	mittel	media	Myway	5
		broad	large	breit	ancha	Highway	7

		English	français	Deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
7. (*) (+)	**VG**	**Leaf: division**	**Feuille: découpure**	**Blatt: Fiederung**	**Hoja: división**		
QN	**(a)**	absent or very weak	absente ou très faible	fehlend oder sehr gering	ausente o muy débil	Apollo	1
		weak	faible	gering	débil	Aladin	3
		medium	moyenne	mittel	mediana	Rococo	5
		strong	forte	stark	fuerte	Myway	7
		very strong	très forte	sehr stark	muy fuerte	Runway	9
8. (+)	**VG**	**Leaf: width of primary lobes**	**Feuille: largeur des lobes primaires**	**Blatt: Breite der Lappen erster Ordnung**	**Hoja: anchura de los lóbulos principales**		
QN	**(a)**	narrow	étroits	schmal	estrecha	Runway	3
		medium	moyens	mittel	media	Highway	5
		broad	larges	breit	ancha	Rococo	7
9. (*) (+)	**VG**	**Leaf: secondary lobing**	**Feuille: découpure secondaire**	**Blatt: Lappung zweiter Ordnung**	**Hoja: lobulado secundario**		
QN	**(a)**	absent or very weak	absente ou très faible	fehlend oder sehr gering	ausente o muy débil	Aladin	1
		weak	faible	gering	débil		3
		medium	moyenne	mittel	medio	Rococo	5
		strong	forte	stark	fuerte	Myway	7
		very strong	très forte	sehr stark	muy fuerte	Highway, Runway	9
10.	**VG**	**Leaf: undulation of margin**	**Feuille: ondulation du bord**	**Blatt: Randwellung**	**Hoja: ondulación del borde**		
QN	**(a)**	weak	faible	gering	débil	Highway	3
		medium	moyenne	mittel	media	Rococo	5
		strong	forte	stark	fuerte	Myway	7

		English	français	Deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
11.	**VG**	**Leaf: hairiness**	**Feuille: pilosité**	**Blatt: Behaarung**	**Hoja: vellosidad**		
QN	**(a)**	weak	faible	gering	débil	Highway	3
		medium	moyenne	mittel	media	Sky Rocket	5
		strong	forte	stark	fuerte		7
12. (*) (+)	**MG**	**Time of flowering**	**Epoque de floraison**	**Zeitpunkt der Blüte**	**Época de floración**		
QN		early	précoce	früh	temprana	Astro	3
		medium	moyenne	mittel	media	Highway	5
		late	tardive	spät	tardía	Runway	7
		very late	très tardive	sehr spät	muy tardía	Sky Rocket	9
13.	**VG**	**Plant: height at flowering stage**	**Plante: hauteur au stade floraison**	**Pflanze: Höhe im Blühstadium**	**Planta: altura en floración**		
QN		short	courte	niedrig	baja		3
		medium	moyenne	mittel	media	Rococo	5
		long	longue	hoch	alta	Highway	7
14. (*) (+)	**VG**	**Flower: color of petals**	**Fleur: couleur des pétales**	**Blüte: Farbe der Blütenblätter**	**Flor: color de los pétalos**		
PQ		whitish	blanchâtre	weißlich	blanquecino	Rococo	1
		cream	crème	cremefarben	crema	Myway	2
		light yellow	jaune pâle	hellgelb	amarillo claro	Highway	3
15.	**VG**	**Flower: anthocyanin coloration of veins**	**Fleur: coloration anthocyanique des nervures**	**Blüte: Anthocyanfärbung der Adern**	**Flor: coloración antoaciánica de los nervios**		
QN		absent or weak	absente à faible	fehlend oder gering	ausente o débil	Flash	1
		medium	moyenne	mittel	media	Highway	2
		strong	forte	stark	fuerte	Rococo	3

8. Explanations on the Table of Characteristics

8.1 Explanations covering several characteristics

Characteristics containing the following key in the second column of the Table of Characteristics should be examined as indicated below:

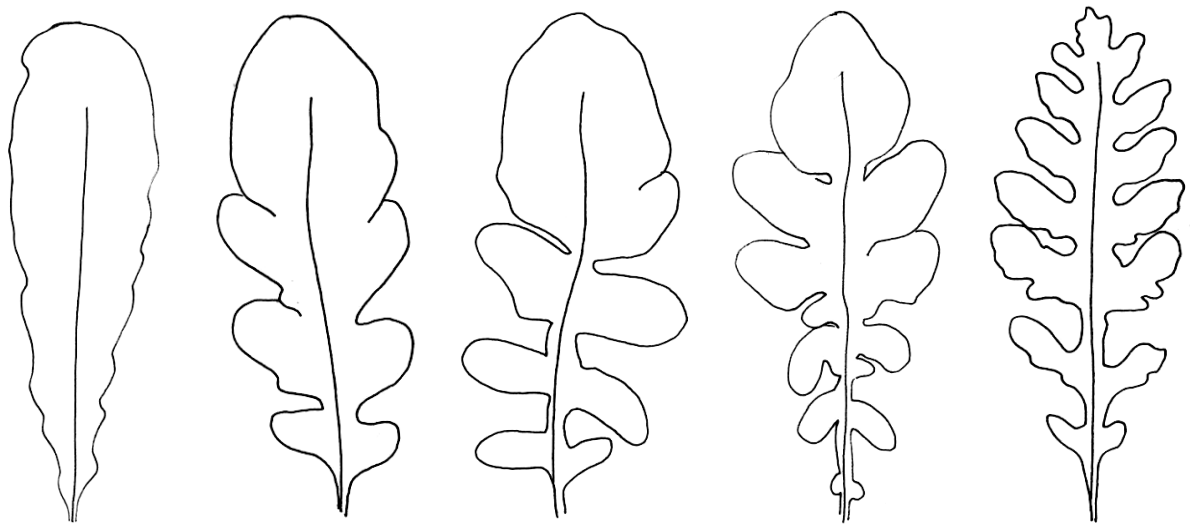
(a) All observation on the leaf should be made on the rosette before the appearance of the inflorescence.

8.2 Explanations for individual characteristics

Ad. 5: Leaf: length

The leaf length includes the blade and petiole.

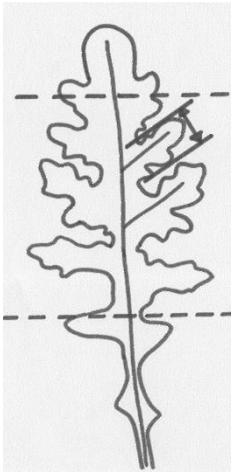
Ad. 7: Leaf: division



1	3	5	7	9
absent or very weak	weak	medium	strong	very strong

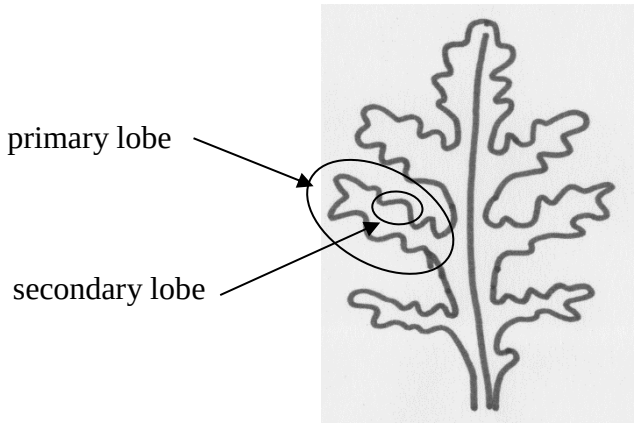
The division of the leaf should be observed in the middle third of the leaf.

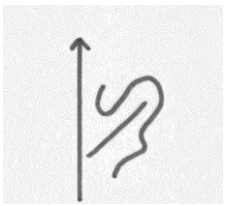
Ad. 8: Leaf: width of primary lobes



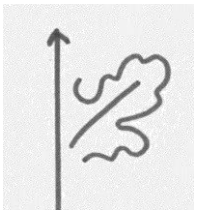
The width of the primary lobes should be observed in the middle part of the leaf.

Ad. 9: Leaf: secondary lobing

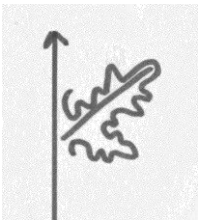




3
weak



5
medium



7
strong

Ad. 12: Time of flowering

The time of flowering is when 50% of plants have at least one open flower.

Ad. 14: Flower: color of petals

The color of the petals should be observed at the time of flower opening.

9. Literature

IPGRI, 1999: Descriptors for Rocket (*Eruca* spp.). International Plant Genetic Resources Institute, Rome, IT, 56 pp.

Padulosi, S., Pignone, D., editors, 1997: Rocket: a Mediterranean crop for the world. Report of a workshop, 13-14 December 1996, Legnaro, IT. International Plant Genetic Resources Institute, Rome, IT, 97 pp.

10. Technical Questionnaire

TECHNICAL QUESTIONNAIRE	Page {x} of {y}	Reference Number:

	Application date: (not to be filled in by the applicant)

TECHNICAL QUESTIONNAIRE

to be completed in connection with an application for plant breeders' rights

1. Subject of the Technical Questionnaire

1.1 Botanical name	*Eruca sativa* Mill.
1.2 Common name	Garden Rocket

2. Applicant

Name	
Address	
Telephone No.	
Fax No.	
E-mail address	
Breeder (if different from applicant)	

3. Proposed denomination and breeder's reference

Proposed denomination (if available)	
Breeder's reference	

TECHNICAL QUESTIONNAIRE	Page {x} of {y}	Reference Number:

[#]4. Information on the breeding scheme and propagation of the variety

4.1 Breeding scheme

Variety resulting from:

4.1.1 Crossing

(a) controlled cross [ ]
(please state parent varieties)

(b) partially known cross [ ]
(please state known parent variety(ies))

(c) unknown cross [ ]

4.1.2 Mutation [ ]
(please state parent variety)

4.1.3 Discovery and development [ ]
(please state where and when discovered and how developed)

4.1.4 Other [ ]
(please provide details)

4.2 Method of propagating the variety

(a) Cross-pollination
(i) population [ ]
(ii) synthetic variety [ ]

(b) Other [ ]
(please provide details)

[#] Authorities may allow certain of this information to be provided in a confidential section of the Technical Questionnaire.

TECHNICAL QUESTIONNAIRE	Page {x} of {y}	Reference Number:

5. Characteristics of the variety to be indicated (the number in brackets refers to the corresponding characteristic in Test Guidelines; please mark the note which best corresponds).

	Characteristics	Example Varieties	Note
5.1 (4)	**Leaf: anthocyanin coloration of veins**		
	absent	Astro, Flash, Rococo	1 [ ]
	present	Fireworks, Sweet Intensity,	9 [ ]
5.2 (5)	**Leaf: length**		
	short	Rococo	3 [ ]
	medium	Myway	5 [ ]
	long	Runway	7 [ ]
5.3 (6)	**Leaf: width**		
	narrow		3 [ ]
	medium	Myway	5 [ ]
	broad	Highway	7 [ ]
5.4 (7)	**Leaf: division**		
	absent or very weak	Apollo	1 [ ]
	weak	Aladin	3 [ ]
	medium	Rococo	5 [ ]
	strong	Myway	7 [ ]
	very strong	Runway	9 [ ]
5.5 (9)	**Leaf: secondary lobing**		
	absent or very weak	Aladin	1 [ ]
	weak		3 [ ]
	medium	Rococo	5 [ ]
	strong	Myway	7 [ ]
	very strong	Highway, Runway	9 [ ]

TECHNICAL QUESTIONNAIRE	Page {x} of {y}	Reference Number:

	Characteristics	Example Varieties	Note
5.6 (12)	**Time of flowering**		
	early	Astro	3 [ ]
	medium	Highway	5 [ ]
	late	Runway	7 [ ]
	very late	Sky Rocket	9 [ ]
5.7 (14)	**Flower: color of petals**		
	whitish	Rococo	1 [ ]
	cream	Myway	2 [ ]
	light yellow	Highway	3 [ ]

TECHNICAL QUESTIONNAIRE	Page {x} of {y}	Reference Number:

6. Similar varieties and differences from these varieties

Please use the following table and box for comments to provide information on how your candidate variety differs from the variety (or varieties) which, to the best of your knowledge, is (or are) most similar. This information may help the examination authority to conduct its examination of distinctness in a more efficient way.

Denomination(s) of variety(ies) similar to your candidate variety	Characteristic(s) in which your candidate variety differs from the similar variety(ies)	Describe the expression of the characteristic(s) for the **similar** variety(ies)	Describe the expression of the characteristic(s) for **your** candidate variety
Example	*Flower: color of petals*	*whitish*	*light yellow*

Comments:

TECHNICAL QUESTIONNAIRE	Page {x} of {y}	Reference Number:

[#]7. Additional information which may help in the examination of the variety

7.1 In addition to the information provided in sections 5 and 6, are there any additional characteristics which may help to distinguish the variety?

Yes [ ] No [ ]

(If yes, please provide details)

7.2 Are there any special conditions for growing the variety or conducting the examination?

Yes [ ] No [ ]

(If yes, please provide details)

8. Authorization for release

(a) Does the variety require prior authorization for release under legislation concerning the protection of the environment, human and animal health?

Yes [ ] No [ ]

(b) Has such authorization been obtained?

Yes [ ] No [ ]

If the answer to (b) is yes, please attach a copy of the authorization.

[#] Authorities may allow certain of this information to be provided in a confidential section of the Technical Questionnaire.

TECHNICAL QUESTIONNAIRE	Page {x} of {y}	Reference Number:

9. Information on plant material to be examined or submitted for examination.

9.1 The expression of a characteristic or several characteristics of a variety may be affected by factors, such as pests and disease, chemical treatment (e.g. growth retardants or pesticides), effects of tissue culture, different rootstocks, scions taken from different growth phases of a tree, etc.

9.2 The plant material should not have undergone any treatment which would affect the expression of the characteristics of the variety, unless the competent authorities allow or request such treatment. If the plant material has undergone such treatment, full details of the treatment must be given. In this respect, please indicate below, to the best of your knowledge, if the plant material to be examined has been subjected to:

(a) Microorganisms (e.g. virus, bacteria, phytoplasma) Yes [ ] No [ ]

(b) Chemical treatment (e.g. growth retardant, pesticide) Yes [ ] No [ ]

(c) Tissue culture Yes [ ] No [ ]

(d) Other factors Yes [ ] No [ ]

Please provide details for where you have indicated “yes”.

……

10. I hereby declare that, to the best of my knowledge, the information provided in this form is correct:

Applicant’s name

Signature Date

[End of document]