Region   Case No.

A / B

I   To be completed by the UKCCS: Details of Household

The purpose of the Phase II National Grid form is to confirm that the circuit configurations and load conditions reported in the Phase I questionnaire are applicable to Phase II.

This form should be completed *only* if a National Grid form were sent to the NGC in Phase I, *or* a new NGC line or cable not mentioned on the Phase I REC questionnaire were identified on the Phase II REC questionnaire.

Date and Time of 48-hour Phase II Measurement

Day Month Year	Hours Minutes		Day Month Year	Hours Minutes
	Please use 24 hour clock	*to*		Please use 24 hour clock
Start Date	**Start Time** (of first household **spot measurement**)		**End Date**	**End Time** (of last household spot)

Regional UKCCS Contact: Prof. Ray Cartwright, LRF Centre for Clinical Epidemiology,
17 Springfield Mount, Leeds LS2 9NG.
Tel. (0113) 233 3909

Address of Household

Postcode:

Grid Reference: 100 km   OS Map Sheet No.
(to 10m)   Grid Square   Easting   Northing   (1:50 000 series)

Please attach the relevant Phase I NGC form, or the Phase II REC questionnaire if a new NGC line or cable was identified there:

Phase I NGC form   ☐   Phase II REC questionnaire   ☐   *(Please tick if attached)*

	Day Month Year		Day Month Year		Day Month Year
Date form sent to NGC		Date returned by NGC		Date copy sent to NRPB	

II   To be completed by the National Grid Co.: Check of Phase I Details

If Phase I NGC form attached:

Please check the Phase I NGC external sources details attached, and compare to those for the time of the Phase II measurement:

Is the circuit information for the period of Phase II measurement different
to that for Phase I?   *Please tick:*   ☐ Yes   ☐ No   ☐ Don't Know

Were line load data provided by NGC for Phase I?   *Please tick:*   ☐ Yes   ☐ No   ☐ Don't Know

If yes to either question above or Phase II REC questionnaire attached:
Please complete the rest of the Phase II questionnaire.

If no to both questions:
No further action is required. Please return this page and attached forms to the UKCCS contact.

II   To be completed by the Transmission Company: Distance of Interest

Were line load data provided by NGC for Phase I, *and* are circuit
conditions unchanged since Phase I?   *Please tick:*   ☐ Yes   ☐ No   ☐ Don't Know

If yes: Line load data are also needed for the time of the Phase II measurement. Please ignore the rest of this section and move to page 6, and fill in the details of line load data.

If no (i.e. line load data not provided, or load data provided and conditions since changed):

Please fill in the rest of this questionnaire, to establish whether line load data needed for Phase II:

This section is used to determine the *maximum distance of interest*. This is how close the home has to be to the line or cable for line load data to be required.

All cable/line distances should be perpendicular from the line/cable to the centre of the home.

If there is more than one cable or line, please photocopy the relevant sections.

A) Maximum distance of interest for *Separated Phase Cables* (132 kV and above).

For separated phase cables of ≥ 132 kV, the maximum distance of interest is 20m.

A1)   During Phase II measurements, were there any separated phase
cables of ≥ 132 kV within 20m of the centre of the home?   *Please tick:*   ☐ Yes   ☐ No   ☐ Don't Know

If yes: Please supply a sketch showing the relative location of conductors, with distance of centre line from home, distance separating conductors and phases.

B) Maximum distance of interest for *Overhead Transmission Lines* (132 kV and above).

Here, the distance of interest is calculated from design constants, current and phasing.

B1)   From information supplied by the REC, and from the 1:50 000 maps of England and Wales (for NGC), or from other maps as appropriate, determine the route reference for the line:

_____ (e.g. ZN)

B2)   Please enter the names of the circuits and their GSM reference numbers

Circuit 1 (nearer to the address)   Name: _____   Ref: ☐ ☐ ☐ ☐ ☐

Circuit 2 (further from the address)   Name: _____   Ref: ☐ ☐ ☐ ☐ ☐

B3)   Determine the perpendicular distance (in metres) from the centre of the address to the   ☐ ☐ ☐
centre line of the transmission line? This can be determined from the detailed map,
supplied by the REC.

Where this distance is less than 30m, give the height of the lowest conductor above the floor of the lowest normally-occupied level of the address. This can be measured or obtained from records. If the lowest conductor is below this level, the height is negative.

Please select height (m):   < 10 / 10-15 / 15-20 / 20-25 / > 25

UKCCS EMF *Phase II* National Grid Co. Questionnaire: Page 3   Identifying No.

Region   Case No.

A / B

II   To be completed by the Transmission Company: Distance of Interest (cont.)

B4)   Use the appropriate system drawing supplied to determine the tower design for the relevant section of line.

Answer:_____ [e.g. L6 Balfour Beatty, L3/1, L4(M)]

B5)   Determine the line design constants K_2 and K_3 from the table*:

Line Type	L2	L3	L4	L6	L7	L8	L9	L12	L66	Other 132 kV on steel towers	L34	L132	Other 132 kV on steel towers	Wood pole - portal	Wood pole - trident
K_2	0.89	0.79	0.62	1.00	0.65	0.95	0.73	0.96	0.83	0.62	1.04	0.78	0.69	0.71	0.51
K_3	0.80	0.68	0.53	1.00	0.56	0.88	1.35	0.90	0.77	0.55	Single circuit designs				

* If the line is not included above, then contact Dr. David Renew (tel. 01372 383831)

Enter the design constants here: K_2_____ K_3_____

B6)   Find the current for each circuit in kA. Ideally, this should be the measured annual average current. If this is not available, then it is estimated by half the average of the seasonal pre-fault ratings for the circuit.

If the measured annual average current is available:

Please enter it here:

Circuit 1 _____kA **Circuit 2** _____kA

OR IF it this not available, please give the annual average pre-fault rating:

Circuit 1 _____kA **Circuit 2** _____kA

and multiply these numbers by 0.5:

Circuit 1 _____kA **Circuit 2** _____kA

B7)   Ascertain whether the currents are normally in the same direction or opposite directions or both of these at different times *(please tick):*

Same ☐   Opposite ☐   Both occur at different times ☐   Not known ☐

B8)   Find the circuit phasing by referring to the System Phasing Diagram.

II   To be completed by the Transmission Company: Distance of Interest (cont.)

B9)   Determine which class of phasing this is (examples given for RYB on first named circuit):

Class of Phasing				
Untransposed	Forward Staggered	Reverse Staggered	Transposed	Single Circuit
RYB / RYB	RYB / YBR	RYB / YRB	RYB / BYR	RYB / -
	RYB / BRY	RYB / RBY		

Phasing: *(please tick one)*:

Untransposed ☐   Forward ☐   Reverse ☐   Transposed ☐   Single ☐
                        Staggered   Staggered   Circuit

B10) Referring to the answers to questions B7 and B9, use this table to decide which action (A, B or C) to adopt in the next question, B11.

Circuit Phasing	Currents in the two circuits are normally in the **same** direction	Currents in the two circuits are in **opposite** or **both** directions or **not known**
Untransposed or reverse staggered	A	B
Transposed or forward staggered	B	A
Single circuit operation	C	C

Which action has been chosen? *(please tick)*:   A ☐   B ☐   C ☐

B11) This question determines the maximum distance of interest (r), using the design constants K_2 and K_3 from question B5), the currents in B6) and the action chosen in question B10).

*If **A** was selected in question B10:*

Add together the two currents from question B6.

Enter the answer here: _____ kA

Find its square root: _____

And multiply by 184 x K_2: _____ = r

II   To be completed by the Transmission Company: Distance of Interest (cont.)

If B was selected in question B10:

Select the *smaller* of the two currents from question B6.

Enter the answer here: _____ kA

Find its cube root: _____

And multiply by 110 x K_3: _____ = r_t

Select the *larger* of the two currents from question B6.

Enter the answer here: _____ kA

Find its square root: _____

And multiply by 184 x K_2: _____ = r_s

Divide the smaller current by the larger (the result will be between 0 and 1)

Enter the answer here: _____

And multiply it by 0.8:   _____ = **ab**

Fill in the blanks from above, and evaluate the required distance:

$$r = [\quad ab \quad x \quad r_t \quad] \quad + \quad [\quad (1 - ab) \quad x \quad r_s \quad]$$
$$r = [\_\_\_\_ \ x \ \_\_\_\_] \quad + \quad [\_\_\_\_ \ x \ \_\_\_\_]$$

Enter the answer here: _____ = **r**

If C was selected in question B10:

Select the only current from question B6.

Enter the answer here: _____ kA

Find its square root: _____

And multiply by 184 x K_2: _____ = **r**

B12) If the address is closer to the line than the maximum distance of interest **(r)**, obtained in question B11), line load data are needed for this line.

Compare the distance from the address to the line - given in question B3) - to the distance of interest **(r)** from question B11). Are line load data required?   *Please tick:* Yes ☐   No ☐

If line load data are needed: Please complete section III.

Region   Case No.

A / B

III   To be completed by the Transmission Company: Details of line load data

If you have answered "yes" to section II, question A1 and/or B12, then line load data are required:

(Line load data are also required if load data were provided for Phase I and circuit conditions are unchanged since Phase I.)

Are line/cable load data available for the Phase II measurement
date and time?   *Please tick:*   Yes   No   Don't
Know

If yes to load data available for time of Phase II measurement:

If possible, please supply the line load data as follows:

- As ASCII files on a 3½" floppy disk.

- Disks to be labelled with NGC & the identifying no. (on top RH corner of this form), plus the file name(s) as stated below.

- Half hourly measurement intervals are sufficient.

- One file line per measurement interval, each line being identified by the date and time.

- If the load currents in the circuit(s) are available, then no other quantity is needed.

- If the current is *not* available, then values of MW are required, and, if possible, MVar and Voltage.

Phase II: File name: _____   Line no. of first line of data: _____

Description of each field on a line of data: _____

_____

_____

Region	Case No.				A / B

Additional Information: _____