HEES WALES

SOLID FUEL PILOT SCHEME

REPORT TO THE WELSH ASSEMBLY GOVERNMENT

June 2006

BACKGROUND

In 2004 the Welsh Assembly Government extended the HEES Wales scheme to allow for a solid fuel central heating pilot. The main aim of the pilot was to determine if this form of heating was an effective and economical solution to heating homes of eligible HEES applicants which were not serviced by a mains gas supply. Permission was given to fund up to 50 eligible HEES+ applications. As the installation costs were anticipated to exceed the normal grant maxima of £2700, the limit was waived to enable the scheme to proceed. Normally, under the scheme the client would be expected to pay the excess. Where an eligible application was also recommended for insulation measures these would be paid for via Integration Funds.

Approved Coal Merchants were invited to submit applications from their customers that were thought suitably eligible. Eaga considered 54 applications, however 25 applications were not progressed with for the following reasons,

- 6 were not deemed HEES+ eligible after assessment
- 12 did not want to proceed, the main reasons being that the clients would have preferred to have either LPG or Oil, or they didn't want the mess and inconvenience of the work
- 2 denied landlord permission
- 5 had access to a gas supply and opted for gas central heating.

The 29 remaining properties were situated throughout Wales and the table shows the coverage by area. The fact that the majority of systems were installed in the north and mid/west is indicative of rural areas not being serviced by mains gas.

Area	Number	%
North	11	38%
Mid/West	5	17%
South	13	45%

A project team was established and comprised of:

Paul A. Brown Eaga Partnership Ltd

Neil Clevett Eaga Partnership Ltd

Jane Heginbotham Solid Fuel Association

Graham Lewis & Peter Grabowski Tower Colliery

See Appendix 1 for list of all applicants together with associated costs.

TECHNICAL ISSUES AND INSTALLING COSTS

The central heating and hot water system consists of,

- An open–flue closed room heater (either Charnwood or Parkray)
- Up to 5 radiators complete with thermostatic radiator valves were applicable
- Room thermostat and Time switch
- Fuel bunker complete with ½ tonne smokeless fuel.

See Appendix 2 for Solid Fuel Technical Specification

Eaga's purchasing department sourced all the main heating components to reduce costs.

After completing a competitive tendering exercise Colin Laver Heating Ltd, Peter O'Neill (services) Ltd and Lionheart Heating Services were appointed as being the most competitive by price. All are HETAS registered installers.

The installation works were originally planned to start in August 2004 and be completed by December 2004. However this was not to be the case as the installations were delayed for several reasons outside the control of the project team.

Delays were attributable to,

- A shortage of suitably qualified and registered operatives (one of the appointed installers withdrew their services for the N. Wales area).
- The installers having excessive workloads with autumn/winter being their busiest period.

- Problems with supply of Parkray products.

- Agreeing a mutually convenient time with the client as many of the properties were situated in remote rural locations.

The last installation was completed in September 2005, delayed because the client was in hospital. All the installations have been inspected by Eaga inspectors who report that a good standard of workmanship has been achieved bearing in mind the difficulties posed by the construction of some of the properties.

The average cost was originally estimated at £2625. However, once on site it was soon apparent that unforeseen works would affect cost. The majority of properties required a new flue liner to conform with current Regulations, and several variations were submitted to cover the additional cost of working on properties that had thicker than average solid stonewalls. These factors have caused the average cost of a completed system to rise significantly to £4204. All eligible applications exceeded the grant maxima.

The installers have provided the following feedback:

1. The installation of the wet system was made difficult by type of house encountered. The majority of properties had thick solid stonewalls which caused difficulties when drilling holes and providing vents. This had an effect on the cost due to the additional time spent on site.

2. The majority of properties required a new flue liner or flue to comply with current Building Regulations. The labour time required to install and commission a solid fuel heating system in the types of properties encountered was much greater than that required to install gas.

3. Outlying rural areas – access problems and greater travel time impacted on the cost.

4. All installers stated that their original contract price for solid fuel installation was not sufficient and would have to increase if solid fuel central heating became a main measure, due to the factors described above.

CLIENT SURVEY & FEEDBACK

A client survey was sent out to all 54 clients who applied for the pilot including those not eligible. The questionnaire was designed after consultation with the Solid Fuel Association. See appendix 3.

22 forms were returned representing a response rate of 41% The analysis of the main questions answered was as follows:

Q2 – 75% stated they found the process east to understand, 15% difficult, 10% no response.

Q3 – Average time taken for Eaga to contact client 4 –8 weeks

Q4 - Time taken for Assessor to visit was more than 8 weeks, due to the names of clients being put on a list to determine viability of pilot.

Q6 – What heating system did you have – 50% SF open fire, 19% SF central heating(broken), 19% electric, 12% other.

Q7 – Are you happy with the system – 70% yes, 30% no

Q8 – Where you happy with the installer – 75% yes, 25% no

With regard to heating costs referral to the Questionnaire Spreadsheet, Appendix 4 indicates costs before and after installation. Where it is possible to compare information 8 clients said that the new heating system was more expensive to run, with 5 stating it was cheaper and 1 reporting no difference.

OBSERVATIONS

- It was initially thought that the coal merchants would have no difficulty identifying 50 eligible clients for the pilot. This was not the case with only 29 eligible applications being put through the pilot despite the closing date being extended. The main reasons for this was that many of the coal merchants' clients already had solid fuel heating, or some clients were infirm or disabled and solid fuel would not be appropriate because of the need to carry coal from the bunker to the room heater, or the applicants preferred a 'hands free' system, such as oil or gas, that did not require daily maintenance.

- Solid fuel heating has proved expensive to install at an average of £4204 and the cost of providing a 5-radiator system with solid fuel room heater will exceed the grant maxima of £2700 by over £1500 (based on pilot). However many of the properties are 'hard to heat'

homes and the clients are now benefiting from the central heating systems. If solid fuel central heating is made a main measure it is likely that there would be an excess amount payable by the client in all cases. Therefore the grant maxima would have to be increased.

- If Solid Fuel Central Heating becomes a measure the difficulties obtaining suitably qualified contractors to undertake the work Wales' wide would present problems. If a formal tendering approach did not attract sufficient installers to cover Wales at realistic prices, then alternative methods to appoint installers would have to be considered. One suggestion would be to make ad-hoc appointments of local HETAS approved engineers to undertake the work within agreed specification and cost, with a post installation inspection undertaken prior to payment being made.

Many clients initially approached indicated they would have preferred oil as it was low maintenance and more suitable to their life style or disability. With the advent of oil fired central heating now available on the scheme it is envisaged that any demand for solid fuel is going to be reduced.

Paul A. Brown
Surveying & Inspection Manager

16 June 2006

APPENDICES

1. Solid Fuel Pilot control spreadsheet with costs
2. Technical Specification
3. Customer Survey Form
4. Customer Survey Spreadsheet

Annex 1

LL54 6AF	Housing Benefit	Owner Occupied	Client Cancelled	Cancelled at survey stage		
HR3 5PR	DLA	Owner Occupied	Complete	Complete	£3,306.23	£446.82
SA44 5UG	AA	Private Rented	Cancelled	Clients landlord cancelled		
SA44 5SH	Pension Credit	Owner Occupied	Complete	Complete	£4,558.24	
SA44 5RS	CTB	Owner Occupied	Cancelled	No contact from Client		
SA44 5XT	DLA	Owner Occupied	Client Cancelled	Client not willing to pay excess		
LL41 4PP	Income Support	Owner Occupied	Cancelled	Client has Electric Storage Heaters. Wrote to Client + Closed 04-08-04		
NP16 6EZ	CTB	Owner Occupied	Cancelled	Client not over 60		
NP44 1JP	Income Support	Private Rented	Complete	Complete	£3,588.09	
LL65 3RR	CTB	Owner Occupied	Cancelled	Client not on benefits		
SA44 5RY	Pension Credit	Owner Occupied	Client Cancelled	Client had work done privately		
CF3 4EL	Family Tax Credit	Owner Occupied	Client Cancelled	Cancelled by client at survey		
LL57 4YN	Income Support	Owner Occupied	Complete	Complete	£4,382.05	£212.50
NP20 7AE	Income Support	Owner Occupied	Cancelled	Client has already had storage heaters installed		
LL55 3HT	Income Support	Private Rented	Complete	Complete	£4,513.77	
CF23 7EX	DLA	Owner Occupied	Cancelled	Client having Gas Central Heating		
CF3 5QY	DLA	Owner Occupied	Complete	Complete	£3,504.47	£40.03
LL60 6LE	DLA	Private Rented	Cancelled	Cancelled - Client not eligible		
NP4 7UN	Income Support	Private Rented	Cancelled	Only Eligible for HEES		
SA6 8HG	DLA	Owner Occupied	Cancelled	Client having gas central heating		
NP11 5JL	DLA	Owner Occupied	Complete	Complete	£3,190.85	£69.43
NP4 6LE	AA	Private Rented	Cancelled	Client having Gas Central Heating		
LL68 0SH	DLA	Owner Occupied	Complete	Complete	£4,363.33	£9.45
LL41 4SP	DLA	Owner Occupied	Complete	Complete	£4,203.28	£9.45
NP4 9NL	DLA	Owner Occupied	Complete	Complete	£4,710.13	£327.30
NP4 6LX	DLA	Owner Occupied	Complete	Complete	£3,656.86	£148.37
LL53 6TQ	DLA	Owner Occupied	Complete	Complete	£4,042.30	£457
CH8 9BN	DLA	LA	Cancelled	Client has cancelled		
LL26 0BQ	Pension Credit	Owner Occupied	Client Cancelled	Lionheart have advised that client has cancelled		
LL32 8HQ	DLA	LA	Complete	Complete	£4,382.09	

NP15 1HA	AA	Owner Occupied	Complete	Complete	£4,655.77	£59.98
SA73 3DL	Income Support	LA	Cancelled	No permission		
NP18 1PD	DLA	Private Rented	Complete	Complete	£4,525.89	£214.23
NP11 5BQ	Income Support	Owner Occupied	Complete	Complete	£3,314.05	£63.04
LL53 8ED	DLA	Owner Occupied	Complete	Complete	£5,284.69	£1,264.50
SA62 6TP	Income Support	Owner Occupied	Cancelled	No Contact from client		
SA15 5PF	Pension Credit	Owner Occupied	Cancelled	No Contact from client		
SA6 6EL	DLA	Owner Occupied	Cancelled	Client having gas central heating		
NP4 6UH	DLA	Owner Occupied	Complete	Complete	£3,429.68	£102.90
SA73 2QP	Income Support	Private Rented	Complete	Complete	£4,433.84	
SA62 6AX	DLA	Owner Occupied	Complete	Complete	£2,985.91	£313.51
LL71 8ED	DLA	Owner Occupied	Complete	Complete	£4,401.45	£280.19
LL54 7NH	AA	Owner Occupied	Complete	Complete	£4,567.39	£250.57
SA73 2QH		Owner Occupied	Cancelled	No Contact		
LL54 7BH	DLA	LA	Cancelled	Cancelled		
SA17 5UB	DLA	Owner Occupied	Complete	Complete	£2,762.94	
SA67 8BE	AA	Owner Occupied	Complete	Complete	£3,410.39	£274.36
SA38 9EH	Income Support	Owner Occupied	Cancelled	client already has solid fuel heating, allocated a coal repair		
NP15 1ND	Income Support	Private Rented	Complete	Complete	£5,486.50	
LL64 5JA	Income Support	Owner Occupied	Complete	Complete	£4,435.95	
LD1 6NN	DLA	Private Rented	Cancelled	Client cancelled		
NP13 2DQ	Income Support	Private Rented	Complete	Complete	£5,749.54	
NP16 6TF	DLA	Private Rented	Complete	Complete	£5,276.86	£498.36
LL32 8JZ	Housing Benefit	Owner Occupied	Complete	Complete	£4,809.17	£309.55

Annex 2

HEES Wales: Solid Fuel-Fired Central Heating Systems Pilot Scheme

1.0 System Specification

The Installer must specify and install a central heating system to provide heating and hot water in accordance with this document. The principal components of the solid fuel central heating system must comprise:

- An open-flue closed room heater and back boiler serving a fully pumped heating and gravity fed domestic hot water system, (as an alternative a floor standing gravity fed boiler will be considered if room heater/boiler is not appropriate),
- A suitable and safe flue to ensure removal of combustion products.
- Header tank providing cold water feed to central heating system,
- Pipework connecting the stove to domestic cylinder and heat boiler to emitters,
- Permanent ventilation
- Steel panel radiators including TRV's,
- Time and temperature controls.
- Provision of an appropriately sized bunker, complete with 1/2 tonne of recommended smokeless fuel

The heating system for each dwelling must provide heating to up to five radiators. It must be remembered that this scheme provides for a budget heating system only.

System to comply with the requirements of the 2002 edition of Approved Document J of the Building Regulations.

Any existing stove, heating arrangement etc. must be decommissioned and removed from the property, and the installer shall undertake any making good. Any costs will be deemed inclusive of the tender sum.

2.0 System Design

To simplify the supply of materials and selection of suitable equipment for each dwelling, a "pack" system will be adopted.

The installer shall carry out a technical survey of the property and decide on the most appropriate boiler type, radiator pack and controls to be used. A 'Central Heating Checklist' will be completed by the installer and sent to Eaga Newcastle, who will then place an order with our supplier. The pack will be available for collection from a nominated merchant. The pack **will** include: -

- A closed room heater with back boiler (from the approved list see table 1). Note that the Trianco TRG45 is only to be used in situations where it is the only option.
- A pack of 4 or 5 radiators (depends on pack No). Pack 1 contains 4 radiators and packs 2 – 5 contain 5 radiators
- Timeswitch/programmer and room thermostat.
- 3 or 4 Thermostatic radiator valves (depends on pack No).
- 5 or 6 lockshield radiator valves (depends on pack No).

All other components, pipework, valves, fittings and sundry items (including electrical items) must be supplied by the installer for each installation.

2.1 Approved Boilers

The Installer will decided upon the most suitable boiler from the approved list set out in table 1, in consultation with the applicant.

TABLE 1 APPROVED BOILER LIST

Manufacturer	Model
Charnwood	LA45iB
	LA45Bfs
Parkray	99G
	Cumbria99
	Chiltern99
Trianco*	TRG45*

* This boiler is only to be used in situations where it is the only option and where the other boilers listed are not suitable. Authority must be obtained from Eaga Wales.

2.1 RADIATOR SIZES & WALL SPACE REQUIREMENTS

The most suitable radiator pack must be chosen from the list of 6 to achieve, or closely achieve the room temperatures set out in table 2:

Table 2

Room	Design Temperature	Radiator Type
Living Room	21^{o}C	Double panel double convector where independent boiler used. No radiator required in room with room heater unless the room size is excessive.
Kitchen	18^{o}C	Double panel Double convector
Hall / Landings	18^{o}C	Double panel Double convector
Bathroom	22^{o}C	Double panel Double convector
Bedroom	18^{o}C	Double panel Double convector (No more than 5 radiators per system allowed within scheme - see table3 & 4)

All radiators should be double panel double convectors where practical, fitted complete with brackets inc. plastic expansion clips, air vents and plugs

All radiators should be checked both prior to installation and following installation to ensure that their paintwork is not damaged, that there are no signs of external damage, and that there are no sharp or damaged edges which could cause harm.

All radiators should be connected with top–bottom-opposite-end (TBOE) connections conforming to the standard BS 3528. This is to facilitate the use of the controls by the elderly occupants. If the client requests TRV's be placed at bottom of radiators then the installer must obtain clients written agreement.

All radiators (with the exception of the hall radiator) will be fitted with a thermostatic control valve and a lockshield-regulating valve. The hall radiator should be fitted with lockshield-regulating valves at both ends. The flow of water to the radiators must be adjusted so that all parts of the system receive the correct amount of heat.

Table 3 Minimum Radiator heat outputs in Watts* for each pack

Pack No	Bathroom	Hall	Main living room (if no room heater)	Other living room	Bedroom
1	652	0	1398	1281	1191
2	820	730	**1765**	**1652**	1124
3	1483	1079	**1998**	1191	1360
4	1146	**1539**	**2207**	**2045**	1247
5	933	719	**2525**	**2326**	**1820**
6	1258	**2337**	**4118**	**2955**	**2326**

* ***These heat outputs are based on a radiator mean temperature of 80oC with a room temperature of 20oC (i.e. temperature difference of 60oC.)***

Radiators shown in *bold* ***type must be connected using pipe of at least 15mm OD.***

Table 4 Radiator space requirements

	Space required for radiator (mm)				
Pack	**Bathroom**	**Hall**	**Main living**	**Other living**	**Bedroom**

No			room	room	
1	750x850	0	750x1150	750x1050	750x950
2	750x1050	750x950	**750x1150**	**750x1150**	750x950
3	850x1050	750x950	**750x1250**	750x950	750x1150
4	850x850	**750x1150**	**750x1350**	**750x1250**	750x1050
5	850x1250	750x950	**750x1450**	**750x1450**	**750x1250**
6	750x1050	**750x1450**	**850x1850**	**750x1650**	**750x1450**

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In normal circumstances, the radiators should be placed at the point of greatest heat loss. This general rule becomes less critical when the dwelling is of good insulation standards. The installer should recommend the best position to site the radiator, however the householder should be the final arbiter on the positioning of the radiators.

The installer will obtain the clients written agreement for the positioning of the radiators and controls before the work commences and record this using Eaga's 'Central Heating Checklist' form.

Where there are more than six separate rooms in the dwelling, householders may choose which rooms have the radiators installed in them, subject to the following:

1. There is a radiator or room heater installed in the main living room,
2. There is a radiator in the main bedroom, the hall and the bathroom, and
3. The maximum number of radiators provided for under this scheme is 4 or 5 dependant on the number of rooms in the property.

Any additional radiators required by the client (over and above those identified in Table 3) are to be paid for by the client.

A kitchen / living room or a kitchen / dining room should be assumed to be one room. A living room / dining room should be assumed to be two rooms.

3. Flue Requirements

The room heater with boiler or free standing boiler will be connected to a suitable and safe existing lined chimney flue, a new vertical chimney flue, or a relined existing chimney flue.

The flue specification must meet standards demanded by the Building Regulations, relevant BS standards, including BS6461 - Installation of chimneys and flues for domestic appliances
burning solid fuel, HETAS requirements as set out in the official guide for approved solid fuel products and services and, the manufacturers written instructions.

An existing flue (chimney) must undergo a masonry check and smoke test prior to any decision being made to introduce a lining. A masonry check will comprise a visual check of the external and internal wall of the flue. The flue should not be used if the surveyor considers there is a need for pointing, stone renewal work or any other repair deemed to introduce a risk of the flue failing to function adequately and above all safely. A masonry check should be followed by a pressure smoke check. To BS 6461 If the flue fails either of these tests then the Installer should not proceed, until such times the necessary repairs are completed or an alternative flue arrangement is agreed. Repairs to existing flues fall outside the scope of the grant, and will be the responsibility of the owner to fund.

Where there is an existing lined or re-lined chimney flue, the integrity of the lining of the chimney flue must be checked by a competent surveyor. This chimney flue is not to be used if it fails to function adequately and safely until such times the necessary repairs are completed or an alternative flue arrangement is agreed. Any repairs to an existing chimney flue lining fall outside the scope of the grant works, and will be the responsibility of the owner to fund

If it is necessary to install a new flue then the installer must request and obtain a variation order from Eaga Cardiff office before work commences. Flue liners should be selected from the HETAS Official Guide.

4. Ventilation Requirements

Consideration must be given to the additional ventilation requirements for open-flue appliances. Air vents must meet the standards as set out in the Building Regulations and that demanded by HETAS. Particular care has to be taken to avoid the risk of spillage of flue gasses from solid fuel combustion appliances. Advice on testing for spillage can be obtained from the BRE Information Paper IP 7/94.

5. Domestic Hot Water

The stove will provide heat to an indirect hot water cylinder. The stove will be connected to the existing hot water distribution pipework in the dwelling i.e. existing pipework that connects to hot water taps and other outlets (washing machines, etc).

Existing cylinders will be used if appropriate. Otherwise a replacement indirect cylinder must be installed (900x450mm 140 litre capacity) and manufactured in accordance with BS1566: 2002. The tank should be provided with a replacement electric immersion heater and be factory insulated with CFC free foam to a thickness of at least 37mm.

6. Heating System Controls

6.1 Circulation Pump

The boiler will require an external circulation pump to serve the heating circuit. The system should be fitted with a high limit thermostat to switch the pump ON in the event of a rise in the boiler temperature.

6.2 Programmer / Time Clock

The heating system will be provided with an external timer / programmer providing independent control of hot water and central heating and being capable of being read and adjusted by the householder. It is the Installer's responsibility to ensure that householders understand how the timer / programmer works and they are able to adjust it to meet their heating requirements.

6.3 Thermostatic Radiator Valves

All radiators should have thermostatic radiator valves (TRV's) with the exception of the hall, which should have regulating lockshield valves at both ends. The radiator in the hall should therefore not have a TRV fitted. . Thermostatic radiator valves must conform to BS2767: 1972.

7. Pipework and Fittings

All pipe work and fittings will be installed using copper only having the necessary approvals and subject to all regulatory and legislative requirements and meeting boiler and radiator manufacturers written instructions.

All heating pipework must be small bore. The use of microbore is not permissible. The primary flow must be in 28mm outside diameter (o/d) pipework to serve the domestic hot water cylinder with the heating circuit only, reducing to 22mm o/d with further reductions to 15mm o/d permissible only for

branches to individual radiators. Heating pipe design must allow for heat balancing of the system to ensure that each room receives the correct amount of heat.

All heating pipework will be surface mounted, be installed as unobtrusively as possible and will be neatly bracketed to walls and other surfaces.

All pipework shall be adequately and securely supported with proper clips or brackets correctly spaced to allow for expansion of tubes in accordance with the table below: -

Table 4 Clip Intervals for Copper Piping.

Pipe Size	Vertical Run Clip Spacing (Insulated or Uninsulated)	Horizontal Run Clip Spacing (Insulated) (Uninsulated)
15mm	1.8 Metres	1.2 Metres 1.2 Metres
22mm	2.4 Metres	1.5 Metres 1.8 Metres
28mm	2.4 Metres	1.5 Metres 1.8 Metres

All exposed vertical supply pipes serving top entry connections to radiators must be kicked back and clipped to the wall.

All exposed vertical runs to be encased in PVCu trunking and vertical supply pipes serving top entry connections to radiators must have a suitable plastic covering that will give a degree of thermal break and thus reduce the risk of burns.

Where pipework is in danger of frost damage (e.g. in the loft space or basement) it will be insulated with pre-formed insulation to the required thickness as required by Approved Document L1.

The use of a tin/lead solder and self-cleaning type fluxes shall not be permitted, and if discovered the contractor shall be responsible for the removal and replacement of all affected pipework.

Where pipework passes through masonry walls, floors, ceilings or partitions it shall be inserted through sleeves of suitable material. The edges of the sleeves shall be cleanly cut and left flush with the wall finish.

Isolating valves and cocks shall be included to allow the proper control of the system, and drainage of the system where required.

7.1 Suspended Timber Floors

Where it is necessary to remove floorboards when installing central heating pipes, It is the responsibility of the Installer to adequately survey the condition of any suspended timber floors prior to commencing any work. A record should be taken of worn or uneven surfaces, gaps between boards, and split boards. If floorboards have been recorded to be in reasonable condition but are inadvertently damaged during their removal then they should be replaced in tongue and grooved softwood timber or a suitable tongue and groove flooring grade chipboard at the Installer's expense.

In all cases whether existing or replacement timbers are being used it is the Installer's responsibility to ensure that they are properly fixed and that on works completion surfaces are smooth. Care should be taken to ensure that, batons or noggins are screwed into joists to support the end or edge of floorboards. Floorboards should be screwed in place to allow for access at a later date.

8 ELECTRICAL WORKS

All electrical equipment must comply with the Electrical Equipment (Safety) Regulations and the Electromagnetic Compatibility Regulations.

All electric wiring associated with the heating system will be installed to conform to the latest edition of the IEE Regulations BS7671.

A suitable 3-amp fuse in the isolating switch (complying with BS1363) should be used to protect the complete heating installation. The system will be fully earth bonded and a separate isolating switch will be provided for the boiler if the system-isolating switch is not visible in the same room.

8.1 Electrical Installation

The existing ring main will be extended to provide a 3 amp fused spur adjacent to the system programmer.

8.2 Electrical Cross-bonding

Some types of electrical installations are fitted with cross bonding, which is the internal connecting of all incoming services including gas, oil and water, to the main earth terminal.

Electrical installations with a protective multiple earth (PME) system must be fitted with cross bonding which must be carried out by a competent person (an approved person being an approved contractor of the National Inspection Council for Electrical Installation Contractors (NICEIC) or the local electricity Supply Company.

The radiator situated in the bathroom must be visibly cross-bonded.

It is the Installers responsibility to check whether cross bonding is required and to arrange for the necessary works to be completed by a competent person who is NICEIC registered.

9. Commissioning of System

The system shall be properly commissioned, tested, adjusted and left in complete working order by the installer to the satisfaction of the contract administrator. All costs of commissioning and testing shall be included in the price quoted by the installer.

The whole system should be flushed, vented, balanced, tested for soundness and left in a satisfactory working order.

The Installer should not consider these tests to represent an exhaustive list of all commissioning checks. It is the responsibility of the Installer to adhere to all regulations, recognised good practice and the manufacturers' written instructions with regard to commissioning

On completion of the checks and tests the system should be set to normal operating conditions and the householder advised on how to use the system.

The Installer is responsible for maintaining records of commissioning tests.

A Certificate of Commission should be left with the householder and a further copy retained by the Installer for inspection when required.

9.1 Boiler Integrity Test

The boiler manufacturers written instructions with regard to commissioning should be followed without deviation.

9.2 Pipe Integrity Test

The pipework is to be checked independently of the boiler and radiators by means of a hydraulic wet test. Testing should follow the procedures set out in BS6700: 1997 and manufacturers written instructions without deviation. Any components within the system not designed to take required

pressures should be disconnected. The Installer must ensure that sufficient time is allowed for such procedures, which should take approximately one and half hours.

9.3 Radiator Integrity Test

The integrity of the radiators is to be tested by means of a wet hydraulic test. Testing should follow the procedures set out in BS6700: 1997 and manufacturers written instructions without deviation.

9.4 Heat Test

A heat test should be completed at normal working temperature and include a check of all safety devices and controls.

9.5 Other System Components

The correct operation of all thermostats, mixing valves, pump and cut-out valves is to be checked before the system is signed off as being complete. Testing should follow the procedures set out in BS6700: 1997 and manufacturers written instructions without deviation.

9.6 Balancing

The heating circuits and radiators should then be balanced using a surface temperature thermometer to ensure the correct distribution of heat throughout the system.

9.7 Corrosion

On completion the system will be flushed out and refilled with clean water.

The use of corrosion inhibitor to prevent or reduce the formation of scale is required to protect the completed system. A liquid inhibitor shall be introduced into the system (unless the boiler manufacturer specifically prohibits this) and will be tested for.

The inhibitor shall be compatible with all the system component materials, and shall be used in line with the manufacturers recommendations on concentration, and in accordance with BS7593: 1992.

The inhibitor shall be approximately neutral in pH formulation, and shall be non-hazardous in accordance with all relevant current legislation. A manufacturers 'DO NOT DRAIN' adhesive label shall be conspicuously displayed to indicate that the treatment has been added and this shall clearly indicate the date of introduction to the system.

10 ADVICE ON SYSTEM USE, SAFETY AND RELATED ISSUES

The installer will pre-set all heating and hot water controls. It is the responsibility of the Installer to ensure that the householder fully understands how to operate the system and controls safely.

A full set of manufacturers operating instructions for all equipment and a schedule of equipment should be left on site for future reference.

10.1 Infirm and other Vulnerable Households

The Installer is responsible for ensuring that householders are advised that, if aged or infirm adults or very young children are left unsupervised in the vicinity of a heater, precautions should be taken to ensure that contact couldn't occur.

10.2 Fuel Supply And Storage

The installer will supply and erect a prefabricated fuel bunker (capacity of 0.5 tonne) in a position agreed with the client.

The installer shall also supply 0.5 tonne of smokeless fuel as recommended by the stove manufacturer.

Householders should be given a comprehensive list of fuels as recommended by the stove manufacturer.

11 Health and Safety Standards

All coal-fired central heating systems must be installed in accordance with all relevant Health and Safety legislation, good practice and BS or ISO standards. The Installer is wholly responsible for ensuring that all relevant Health and Safety legislation and regulations are complied with during the installation of the central heating systems.

The installer must employ suitably qualified and experienced staff (meaning that all installing **companies are HETAS approved** and that all individual installers have the qualifications approved by HETAS). The installer upon request must provide this information.

The Installer can establish such procedures as necessary to ensure that the relevant Health and Safety criteria are complied with by their appointed subcontractors, agents, operatives, installers or other representatives. Approved installers will be required to fulfill these procedures as part of their approved status.

12. Monitoring

It is the responsibility of the Installer to ensure that the heating systems are installed so that they are safe, and that they meet the standards and specifications set out in this Annex. The Installer is obliged to ensure that any faults or defects reported to them during the warranty period are rectified within 7 days, however if there is an immediate risk to life or property the installer will respond immediately.

All jobs must be signed off as being completed satisfactorily, competently and in full compliance with all health and safety legislation, regulations and standards by the installer. Self-monitoring by the installer, through the completion of obligatory documentation, must be the first step in the monitoring process.

Eaga will inspect 100% of all the heating systems jobs completed this pilot scheme. This monitoring may include inspections while the contractor is on-site, but must cover post-installation inspections.

In circumstances where the work of an installer gives rise to repeated concerns about the quality of work, the standards applied, or other aspects of the job, Eaga retains the right to remove an installer's from this scheme.

13 GUARANTEE & WARRANTY

The installer shall provide a 12-month guarantee for the system to cover parts & labour. A year after the installation is complete the installer shall undertake a service of the system in line with manufacturers instructions, after which it will be the owners responsibility to maintain. The service must be carried within 4 weeks of the first year anniversary date.

Costs for the guarantee and service will be included within the tender sum.
Summary of Minimum System Specification

Fuel	Manufactured or naturally smokeless fuel as per manufacturer's recommendation.
Boiler & Flue	Floor standing multi-stove and new vertical chimney flue.
Boiler Approval	HETAS Listing and Three-Tick Approval.
Primary Heating System	Conventional flue open vented fully pumped heating system
Domestic Hot Water	Low pressure from indirect cylinder served by stove
Heat Emitters	Steel panel radiators double panel convectors factory paint finish
Emitter Controls	Thermostatic Radiator Valves except hallway
Time Control	Analogue time clock
Pipework	Small bore copper pipework
Pipe Installation	Surface mounted, vertical drops trunked

Annex 3

SOLID FUEL PILOT CUSTOMER SURVEY

Please take the time to fill out the following questionnaire as honestly as possible. Your comments will be treated confidentially, and used to improve service for future HEES applicants.

NAME: _____

Address: _____

_____

_____

POST CODE:_____

1) How did you hear about the Solid Fuel Pilot? (Please tick <u>one</u> box)

Word of mouth ☐ From Energy Advice Centre ☐

An Approved Coal Merchant ☐ Eaga Partnership ☐

Other (please specify) _____

2) When you applied, did you find the application process?

Easy to understand ☐ Difficult to understand ☐

Comments (optional): _____

_____

3) After you applied, how long did you have to wait until the Eaga Partnership contacted you?

Less than 4 weeks ☐ 4-8 weeks ☐ More than 8 weeks ☐

If more than 8 weeks, please specify _____

4) After the assessment from the Assessor, how long did you have to wait until the heating installation commenced?

Less than 4 weeks ☐

4-8 weeks ☐

More than 8 weeks

If more than 8 weeks, please specify _____

5) If you decided not to proceed with your application, could you please tell us why?

Not eligible ☐

Excess to pay ☐

Solid fuel not suitable ☐

Gas central heating available ☐

Other: _____

6) What type of heating system did you have before the new work started?

Solid Fuel Central Heati ☐ Solid fuel open s

Electric Heatin☐ Other_____

7) Are you happy with the way your central heating was installed? YES/NO

Comment (optional):_____

_____

8) Were you happy with the installation company who installed your central heating? YES/NO

Comments (optional)

_____

_____

8) Were you provided with clear instructions on the use of your heating system? YES/NO

We would like to identify any cost savings to your fuel bills that the Solid Fuel central heating has brought you. To do this please answer the following as accurately as possible. Once again, this information will be treated in confidence.

9) On average, how much did it cost to heat your home *per month*

before the central heating was installed?

£_____

10) Since the Solid Fuel central heating installation, roughly how much does it cost to heat your home *per month?*

£_____

11) If you are not sure of the costs, would you say your heating bills are:

Cheaper ☐ About the sar ☐

More expensive ☐

If more expensive do you know the reason why?

_____

Thank you for completing this form, please return it in the freepost envelope provided by 4th May 2006.

Annex 4

Postcode	Q1	Q2	Q3	Q4	Q5	Q6	Q9	Q10	Q11	Reason	Comment

SA44 5SH	Approved Coal Merchant	Easy	Months	More than 8 wks	N/A	Solid Fuel Rayburn	£40	£50	More	Central Heating added, to hot water, no cooking.	There seemed to be lack of communication both between assessor, engineers and customer as to what was going to be done and how. We were not told what the fuel burner would look like or it's size. It's installation is a farce as to fuelling or ash removal as it is on the ground level. As a reasonably fit and able 65 yr old I have to get to my knees to make it up properly and empty the ashes, had it been installed on a 9" high plinth, life would be a lot easier. For an infirm person it would be damn nye impossible. I feel a lot more thought should have gone into the positioning of the stove for use by elderly or infirmed persons.
SA44 5RS	-	-	-	-	-	-	-	-	-	-	I did apply and could have had one of the solid fuel boilers but, as I am the owner of my own house (apart from 2 mortgages) I was not permitted to have one, according to the rules. It was thanks to hot water bottles, I was able to keep warm last winter.
SA44 5XT	Ad in shop	Difficult	10 months	-	£2,200 to pay for flue	40yr old rayburn	-	-	-	-	As I'm disabled and a pensioner I didn't really want solid fuel as I'm not able to carry coal etc,but that was the only option. Then I was told that I had to pay £2,200 for a flue, so I continue to keep warm with a hot water bottle and a blanket. The whole scheme was just a waste of time.
LL41 4PP	-	Easy - Did not have heating.	-	-	-	-	-	-	-	-	-
LL57 4YN	Eaga/Word of mouth	Easy	4-8 wks	-	-	SF Open fire - Mobile gas	£250	-	More	All night heating	-
LL55 3HT	Landlord	Easy	-	-	-	-	£60	£80	More	Have to buy smokeless coal	Very good scheme because we didn't have central heating and had to use electric fires which didn't give off much heat.Installers were very efficient and friendly. Left large hole around vent in the wall but still very happy. Thank you
CF3 5QY	Approved Coal Merchant	Easy	More then 8 - several months	4-8 weeks	-	SF Open	£24	£32	More	Heating whole house not just one room	We are still learning how to cope with our system as it was installed towards the end of winter 2005. But we are happy with it overall

SA6 8HG	Daily Newspaper	E - BY PHONE	More than 8	More than 8	-	SFOF	£80	£53	LESS		the last 6 to 7 months of the central heating being installed, it packed up twice in a matter of 3 days, the second time we waited 3 days before they came to fix it. At the time it qwas freezing weather. The man who was to call on the Monday failed to turn up. When I phoned to ask when they were coming they failed to turn up untill the Wednesday. The gentleman who repaired the boiler only came a few miles down the road from me. That was the only problems I have had since it was installed. Otherwise I am very satisfied with the Central Heating.
NP11 5JL	Approved Coal Merchant	Easy	4-8 weeks	approx 5 months	-	SF Open	-	-	LESS	-	
LL68 0SH	Word of Mouth	Easy	Less than 4 wks	4-8 weeks	-	SF Cheating	£10	£60	More	No heating except a wood burning in one room, now we have solid fuel	-
LL41 4SP	Eaga	Easy	4-8 weeks	9 Months	-	Solid Fuel open fire	£56	£100	More	Smokeless fuel - Longer lasting than coal	We are very pleased with the system as we have been much warmer this winter and a lot less work with it.
LL53 6TQ	Leaflet	Difficult	Can't remember exactly	More then 8 wks	-	Wood Burning stove oil fired aga	-	-	No Savings	-	We are unhappy with the standard of fire installed, difficult to clean, flue blocks easily causing smoke to enter room. Swept chimney twice since intallation.Design of fire is poor. Name change since new marriege. - Mrs Wilkes
SA15 5PF	Energy Advice	Easy	-	-	-	-	70-80	£0	-	-	-
SA6 6EL	Eaga	Easy	Less than 4 wks	More than 8 wks	-	SF Open fire	£50	Unaware	-	-	-
NP4 6UH	Word of Mouth	Easy	Less than 4 wks	More than 8 wks	-	Solid Fuel CH	£100	£65	LESS	-	-
LL54 7NH	Eaga	Easy	More than 8 weeks	More than 8 weeks	-	Electric	£60	£45	Less	-	-
NP15 1ND	Eaga/Energy Advice	Difficult	More than 8 weeks	12 Months approx	-	Gas fire (bottled)	£70	£40	LESS	-	I was not aware of measurements taken at the survey and feel that the placement of radiators are not correct to give a balenced heat everywhere. I was also not visited by your representative to check installetion - I was away at the time he called and of course the hating was not alight.

LL64 5JA	Eaga	Difficult	18mnth - 2 yrs	More than 8 weeks	Not Eligible	Electric	£65	£80-£120	More	Coal is so expensive	In regards to lionheart: They made such a mess of it. It had to be taken out and re-fitted. Things still wrong: fuse melting in fuse box found. Fuse wire for immersion heater twice as strong as should be. House could have burnt down! Solid fuel is not good option for elderly due to expense and carrying coal with bad back.
LD1 6NN	Energy Advice	Easy	4-8 weeks	-	Not accepted by landlord	Solid Fuel open fire	-	-	-	-	-
LL32 8JZ	Eaga	Easy -	More than 8	4-8 weeks	-	SF Open/Elec	£80	£100	More	Not full ch before installation	Though installed in one day the engineers were unable to commission the installation due to wet cement on/in fire surround. The system has always been noisey, particularly in all upstairs rooms, had to turn off at night.