

Decarbonisation of Heat in High Consuming NHS Trusts

Q&A Kick-off 13th July

No	Trust Member	Question	Answer
1	Josh Balmer	I appreciate that we are still early into the process of rolling out the Net Zero Building Standard, is the intention is to change the requirement to apply the standard to all investments subject to HM Treasury business case approval? If so, are there any indications on what value investment the standard will be applicable to and are there any indicative timelines?	The normal business case and approvals remain in place. Net zero projects normally comprise 2 parts A site infrastructure upgrade, which can vary, but rarely exceeds £10-£20m, & A geothermal well/ DE pipework & heat source/ hydrogen connection and these can vary from a few £m to about £25m and normally can be paid back through a PPA agreement and service contract.
	WRIGHT, Tom (CENTRAL LONDON COMMUNITY HEALTHCARE NHS TRUST)	Looking at the map it appears there are no suitable geothermal sites in London - is that correct?	<u>ALADEGBOLA, Mary (NHS ENGLAND – X24)</u> further to Corrina comments, there are opportunities for district energy in London, it is one of the Mayor's priorities; depending on where your Trust is located C Nattrass – the intention is to help each Trust find a route to net zero, the three preferred options are Geothermal, H2 or green district energy. That does leave about 60 sites that will need to look to other routes, like supporting DE, heat pumps, and other solutions such as will be covered in our later technology talks (31/8 and 4/10)

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3	WHARRAM, Paul (HULL UNIVERSITY TEACHING HOSPITALS NHS TRUST)	how long will the heat in these geothermal pockets hold up if hospitals and other users drill in will it be like water aquifers where we now have problems with pressure on them. will the use be controlled on heat removal?	• <u>Corinna Abesser - BGS</u> There are no DEEP geothermal targets beneath London but London has a SHALLOW aquifer which can be used as a source for heating/cooling in conjunction with ground source heat pump • <u>Rik Evans</u> Hi Paul - if properly designed and operated, a geothermal well will operate for 50+ years. In answer to your question on depletion - we would typically build at least 2 wells into the target and reinject all produced fluids which ensures pressure remains suitable for production • like 1
4	Ned Maynard	Is the suggestion NHSE will conduct feasibility studies for those sites identified as likely targets for geothermal?	Clive Nattrass – The intention is that we will look to work in collaboration to put forward net zero plans and then implement them. At Iheem we will look to put projects into year groups and work together. Each group will decide whether to do feasibilities in bulk or per project.
5	WHARRAM, Paul (HULL UNIVERSITY TEACHING HOSPITALS NHS TRUST)	would it be a requirement to reinject heat to maintain pressure in the store? say from onsite cooling etc	• <u>Rik Evans</u> not a requirement. the geothermal resource is (if deep enough) self-recharging. heat reinjection from cooling is an option - and would be appropriate for a shallower target • <u>Corinna Abesser – BGS</u> As Rik said , deep geothermal schemes typically require two wells one via which warm/hot water (or steam) is abstracted and one via which cooled water is reinjected. Heat

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			is not necessary to maintain the water pressure in the deep reservoir. "Reinjection" of heat from cooling is often done for shallow systems (open-loop ground source heat pumps) where the aquifer is used for heating and cooling. In those cases, waste heat from summer cooling can be used for heating in winter and vice versa.
6	Katharine McCormick	I'm struggling to see viable options for London? We have very limited space on site so even ASHPs are going to be a challenge in an operational environment	<u>Corinna Abesser – BGS</u> Depending on your location, there is potential for using open-loop ground source heat pumps. They have quite a small spatial footprint - 2 wells and a heat pump <u>Katharine McCormick Reply</u> - Unfortunately we only have a small good in area and no other external space C Nattrass – the intention is to help each Trust find a route to net zero, the three preferred options are Geothermal, H2 or green district energy. That does leave about 60 sites that will need to look to other routes, like supporting DE, heat pumps, and other solutions such as will be covered in our later technology talks (31/8 and 4/10)
7	Karl Fleetwood	hydrogen would be a very good stopgap on our journey to decarbonisation. if we could only get the government to guarantee it will happen have the government guaranteed that we will have hydrogen available by a certain date?	Government have a 10GW production target by 2030. They have a hydrogen production business model to support the production cost and they are developing a transport and storage model that will explain how the pipelines and storage element of the emerging hydrogen market will work. Although hydrogen is 'new' and therefore effectively not yet guaranteed, both labour and

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			Tory political parties see hydrogen as a good bet economically and they want to drive the establishment of the market. Regionally, it depends where your trust is located as to the likelihood of accessing hydrogen pre 2035
8	Josh Balmer	I appreciate that we are still early into the process of rolling out the Net Zero Building Standard, is the intention is to change the requirement to apply the standard to all investments subject to HM Treasury business case approval? If so, are there any indications on what value investment the st	<u>ALADEGBOLA, Mary (NHS ENGLAND – X24)</u> the standard applies from 1st October 2023 to project at pre SOC by that date. the Business case threshold is £25m. There will be a national webinar in September , we have also developed some training modules to help with compliance which will be circulated through a national comms
9	Karl Fleetwood	A) we could convert existing boilers that are not end of life which would give us more time to finance/fund gas free boilers this way B) also, can we confirm if the current pipelines on our sites would be suited to hydrogen?	Pipes would need to be assessed. The steer from the Hy4Heat government programme, which was focussed on domestic conversion to hydrogen, concluded that existing pipework in homes did not need to be replaced, but this may be different for commercial sites depending on what pipework is in place.
10	Richard Harper	The opportunity for deep geothermal is there, with caveats around practical obstacles such as space required and feasibility studies etc. What funding will be provided to allow these projects and these opportunities to be taken forward?	<u>DENNIS, Simon (SALISBURY NHS FOUNDATION TRUST)</u> The first five pilots have been procured using PSDS, along with supplier risk investment - for example at Salisbury we are funding through our recent PSDS grant. That's applies across the five pilots we've procured for other sites. C Natrass – there may be a need for external funding and grants, and we have been pointed towards the UK Infrastructure Bank as a potential source of additional/ match/ top up funding.
11	Josh Balmer	<u>Hi Mary</u> , are there plans to eventually reduce this threshold?	<u>ALADEGBOLA, Mary (NHS ENGLAND – X24)</u>

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			no decisions have been made on this, however some Trusts are specifying this as part of their requirements for projects below this threshold; albeit this wont have a business case approval implication
12	Richard Harper	Will this carbon be net zero carbon? and at what cost per kWh? Also burning hydrogen in air still creates other pollutants, so how does hydrogen address air quality concerns from combustion?	<u>Brewis, Sally</u> Hi Richard, any hydrogen transported in our network will be 'low carbon' hydrogen and subject to the Govt's low carbon hydrogen standard. It will be a mix of green hydrogen (zero carbon) and blue hydrogen (which is not zero carbon but is low carbon). The mix we expect will be well below the government's threshold. From a cost perspective, the expectation is that the hydrogen will cost similar/the same as natural gas. On air pollutants, domestic hydrogen boilers will have half the NOX emissions as natural gas boilers, a significant improvement. This gives you a good indication of improvements that will also me made in commercial scale boilers.
13	Light, Jason	I can see some benefits to Green Hydrogen, but need to balance out any risk that "potential" may hold up decisions for faster decarbonisation whilst we wait years for it maybe coming on board.. The climate can't really afford projects being held up.	The NHS sites that we are already working with, in core hydrogen areas, are continuing to assess both electric and hydrogen options until a clear 'winner' can be established. Both the electricity networks and the new hydrogen networks could be subject to delays in the development needed.
14	Richard Harper	MULLAN, Kieran the biggest barrier to this being adopted is funding. Net zero carbon in the NHS needs proper strategic funding, not fastest finger first PSDS funding.	C Nattrass – There may be a need for external funding and grants, and we have been pointed towards the UK Infrastructure Bank as a potential source of additional/ match/ top up funding.
15	Pitman Alex	What is ideal scale for deep geothermal?	Clive Nattrass - A site load in excess of 20MKWh pa made up or Trust and geographically close users

