Future Homes Hub

Lessons from Delivering FHS Homes at Scale

Homebuilder Research Interviews

Key Learnings Report

FHS Consumer Implementation Group

Subgroup C-01A - Learning from experience of homebuilders delivering FHS type homes

Version 12 – Final 3 Updated 17-1-25

Foreword

Learnings Report

This learnings report has been compiled following 10x deep dive research interviews with a wide range of homebuilders and developers, operating in the private for sale and affordable for rent new housing sectors.

All developers are building new homes to Future Homes Standards with heat pump technology, either as site trials or business as usual developments. Many smaller developers are mature in use of heat pumps and PV.

The focus of the interviews was on newbuild homes and particularly the consumer journey, with a deeper emphasis on the consumer interfaces with heat pumps, driven by the electrification of homes, in lieu of gas boilers.

The findings were captured into learning cards for each interview (Appendix A) . Many of the homebuilders interviewed also provided best practice examples of information, that they have developed and are using (Appendix B). The interview research methodology is explained within (Appendix C).

The first few slides provide a high-level overview of the key findings and common areas that are critically important to ensure a positive consumer outcomes.

Learnings

Developers Interviews

The developer learnings derived from the research interviews are the views and opinions of the developers involved.

These learnings have been established using specifications, design, construction and commissioning approaches, derived by the developer, that suit the site parameters and/or their business operations and preferences.

Each developer has taken a differing approach and enjoyed varying learning experiences specific to their business to inform future strategies.

Future Homes Hub

The role of the FHH is to facilitate learning and collaborate across the home building sector.

The learnings provided are to inform the reader of a wide range of developer specific learning experiences and are not an admission or endorsement of any one solution, technology or approach used

Background & Purpose

Background

As part of the Future Homes Standard (FHS) Implementation Plan, the Consumer Implementation Group (IG), has developed learning material that maps the consumer journey, highlighting key stages of interaction, learning outcomes, as well as dos and don’ts. These are available to Hub members and open source to non-members.

Purpose

The purpose of the research was to share learnings from a wide range of housebuilders/developers, who have, or are in the process of delivering low energy, all electric homes at scale, that meet or exceed the proposed FHS. A focus of the activity was on the transition to heat pumps and electric heating, hot water, and cooking.

Key Learnings – The Vital View

Marketing, Sales and Design

- Sustainability and low carbon are embedded in business strategy, management, product offering, and legacy impact.
- Promote carbon saving and sustainability benefits of the home, not energy cost savings.
- Use the sales interaction to explain technologies and manage consumer expectations, early on during the consumer journey process and formally reconfirm at reservation.
- Don't be tempted to under design heat pump systems and penny pinch, ensure systems are robust, adaptable to different lifestyle uses, and to an appropriate specification.
- Only use competent heat pump designers, mandate compliance, and red card non-compliant providers.
- Always ensure design is signed off, ideally by an independent third party or manufacturer.

Construction and Quality Assurance

- Undertake QA processes, using robust checklists to monitor work completed and reject poor workmanship.
- Build familiarisation and standardisation through common construction details, specifications, working practices, and subcontractor relationships.
- Only use competent installers that have been trained on the actual product being installed, mandate compliance, and red carding non-compliant operatives.
- Always ensure installation is signed off, ideally by an independent third party (consultant or product manufacturer).
- Ensure all consumer facing staff (site, sales, QA, customer care) are trained, competent and confident with all technologies used.
- Provide an additional winter visit to buyers/renters, to explain differing winter heat pump set-up requirements.

Handover and After Care

- Provide easy access consumer friendly information – QR codes, videos, and online portals work well.
- Provide plenty of aftercare and hand holding, 24/7 for up to 12 months after occupancy.
- Don't bombard consumers with information at handover– provide the need-to-know basics only. Then go back two weeks after occupancy and undertake a deeper familiarisation process.
- Keep a register of defects and analyse this regularly to improve consumer experiences, supply chain and delivery aspects.
- Support community awareness, knowledge sharing, and collective problem solving through online chats or community events.
- Undertake formal building performance evaluation on a sample of homes, capturing leanings to drive improvement.

Consumer Journey – Key Touch Points

Private for Sale

Marketing

Avoid promoting lower fuel bills and instead focus on the sustainability and low carbon benefits of the homes.

Sales process

Ensure marketing messaging aligns and reinforce FHS benefits.

Have structure show home walkthroughs to explain FHS features and benefits

At reservation explain and manage consumer expectations for example lifestyle changes, low temperature heat system, energy bill expectations etc.

Pre-handover

Pre-handover meeting with site manager and sales team 2 weeks prior to handover.

Also consider a pre-plaster visit which allows customers to see pipework, wiring, and construction as this improves consumer understanding of systems used.

Handover

Consider two demos, first a light touch demo at home handover and then a further detailed demo one/two weeks after occupancy, once consumers are settled in with the site manager.

Provide simplified home user guides or links to online videos and contact info for customer care teams.

Aftercare

Provide a winter visit if handover is in summer to remind consumer how tech works.

Customer care teams must be knowledgeable in systems and technology, and available 24/7.

Useful to record issues (consumer understanding, tech faults, design issues etc.) for improvement.

Plenty of return visits and emails for reminders (e.g., servicing, winter operating and help options).

Affordable for Rent

Marketing

Avoid promoting lower fuel bills and instead focus on the sustainability and low carbon benefits of the homes.

Handover to Housing Association

Provide simple Home User Guides and Maintenance User Guides with links to videos and online help.

Continue to provide aftercare support for at least 2 years.

Provide training for maintenance and asset managers on technologies and systems used.

Grant housing association access to subbies and the manufacturers used to assist with and resolve issues.

Pre-handover Housing Association to Renter

Arrange training for consumer facing teams, letting agents, asset managers and maintenance, for homes due to be handed over.

Arrange tenants' familiarisation session (groups of up to 30) to educate tenants on new home features and benefits.

Handover Housing Association to Renter

Home demonstration upon handover.

Use experience of lettings agents and contractors to educate tenants on tech.

If using letting agents, ensure they are knowledgeable and trained on systems being used.

Provide simplified HUGs and links to online videos and contact for customer care teams.

Housing Association Aftercare

Provide a winter visit if handover is in summer to remind consumer how heat pump works.

Tenants provided with housing officer or customer care team as a dedicated point of contact.

Can use data from smart thermostat to explain to tenants how they can make energy savings.

Useful to record issues (consumer understanding, tech faults, design issues etc.) for improvement.

Plenty of return visits and emails for reminders (e.g., servicing, winter operating and help option).

Things to watch for

Success Factors

- Promote carbon savings of home not energy cost savings
- A standard and consistent approach across plots eases installation processes and improves quality assurance
- Undertake heat pump and Solar PV training for site managers, sales, quality managers & customer care staff
- From first consumer contact progressively introduce the low carbon features and benefits and any implications on how to get the best from the home
- Spend time at reservation process (critical stage), to remind the buyer of the low carbon technologies and what to expect.
- Manufacturers (or 3rd parties) sign-off heat pump installs
- Competent and known heat pump trades people on sites only (mandated)
- Heat pump installers trained and competent on the actual system being installed (not generic)
- Established and proven heat pump specifications and supply chain
- Loging defects and/or building performance monitoring, which yields feedback for ongoing improvement
- Technical onsite support from system designer/manufacturer

Don’ts

- Promote energy bill savings, as it depends on homebuyer's previous experience
- Rely on subbies, without strict QA controls
- Wait to explain things at handover stage
- Leave customer to self-educate themselves or overwhelm them with information
- Wait for supply chain to be ready for new regulations– important to be proactive
- Go cheap on heat pump specification, design and installer subcontractors
- Penny pinch and be tempted to use untrained trades people
- Progress if you feel there is an issue, stop review and fix it before going further
- Wait for the regulations, build experience and capability across your business now.

Pain Points

- Getting heat pump design right, don’t undersize
- Security issues with heat pumps, consider timing, access and use temp. anti-theft measures.
- EPC ratings can be lower with heat pumps v gas boilers with PV
- Ensuring correct heat pump design, specification, installation, and commissioning
- Ensure that heat pump design and install processes only use trained and competent trades people/subcontractors, to avoid significant problems later.
- Compatibility and interfaces with heat pump control systems, take care when combining different manufacturers products or systems.
- Inadequate handover information for operation and maintenance of new technologies i.e. heat pumps or Solar PV
- Time to train many roles, design, construction, sales, QA, and customer care teams, ensure training programmes are well planned and resourced
- Customers doing their own thing, i.e. using YouTube for heat pump instructions which might not be appropriate

Dos

- Engage early with buyers, key stage is at reservation meeting point
- Continually educate and manage consumer expectations, reconfirming all the information
- Have trusted, engaged, and reliable subcontractors where strong relationships exists
- Only use competent heat pump designers and installers
- Robust commissioning sign-off with a defined QA checklist
- Ensure heat pump controls are as simple and intuitive as possible
- Focus on customers need to know, less is more
- Ensure all consumer facing staff are confident with technologies used
- Simplify instructions to customers as much as possible
- Focus on what customer really need to know
- Provide an additional winter operation visit
- Undertake monitoring to gather data and feedback the business to improve outcomes

Learnings (In more detail)

Developer Handover to HA

- Provide HUG, QR videos and online portal
- Must provide training to HA maintenance, asset and customer liaison teams
- Provide access to suppliers and installers to explain to HA how the technology works
- Site managers undertake handovers, with trades representatives present

Sales & Marketing

- Major on low carbon, not reduced energy bills
- Manufacturers of technology can provide training for site manager, sales, and customer care teams
- Design and technical brief for all sales staff for each site
- Plans to undertake mystery shopper to assess how sales team perform in explaining new technologies
- Q&A booklet to help upskill sales team prepare for likely consumer queries

Monitoring

- Use monitoring equipment to track actual installation performance, for improvement
- Keep a register of issues which can be analysed, to improve consumer experience, supply chain and understanding
- Undertake BPE to gather data and drive improvement

Sales Process

- Sales progressively explain and manage expectations lifestyle changes, low temp heating format, energy bill expectations at all stages
- At reservation, critical to reconfirm above for NHBQ compliance

HA Handover to Tennant

- Tenants' familiarisation session held to educate new home features and benefits
- Create simplified HUGs for all units and tech (fewer pages and more diagrams, QR codes)
- Letting agents often used, so additional person in the handover/education change to be educated
- Bring in customer care teams early to input long-term considerations to be factored in

Solar PV Learning

- Roofs simplified to maximise output, no hips & south, east/west plot specific design
- Make clear to customers that not all electricity generated can be used by occupant and choose a tariff which pays for export
- Only use MCS accredited suppliers and installers
- If export is limited for a period, explain this and future limitation removal

Customer Care & Handover

- Spend time educating & hand holding buyers on, low temp and continuous running format
- Provide additional support to elderly or vulnerable people
- Provide a winter visit for differing set up needs
- Provide QR codes, “Leave Me Alone” stickers on technologies, linked to website with videos/instructions
- Be clear on home users' don'ts, such as switching of heat pumps.

Quality Assurance

- Heat Pump and new technology tradespeople must be trained and registered, zero tolerance for use of nonskilled people
- Consider QA and customer care being independent of construction, governed by sales and marketing (client facing)
- Quality managers must be trained and competent, undertaking regular inspections, things to look for and go/no-go points
- Build relations and standardised approaches with suppliers, to ensure compatibility from design to handover
- Only use competent person to sign-off installations, ideally 3rd party, such as manufacturers

Leadership

- Sustainability & low carbon are embedded in business strategy, product offering and legacy
- CEO/Leadership team are advocates

Heat Pump Learning

- All site managers, QA, sales and customer care teams must be trained and component in heat pump and other technologies
- Site/QA staff set up heat pump timings, temperatures to suit buyers' preferences, and periodically check with consumers
- Location is key, watch for noise adjacent patios and access for maintenance
- Competent person must sign-off HP installation, ideally a third party
- Design and procurement are key, don’t under-size systems or use cheap materials/systems
- Extra visit to explain winter operation difference
- Use plot specific heat pump tracker log to manage defects, resolutions, and recurring issues

HA Tennant Care & Maintenance

- Of the HAs interviewed, a preference to use radiators, as opposed to u/floor heating, due to ease repair, familiarity and cost
- Tenants commonly switch off systems, due to mindset to save on energy bills, needs constant education on the continuous operation of HPs, D-Mev etc.
- Undertake training of equipment used to educate staff and community groups
- Asset & maintenance managers, require training on new technology and defects resolution
- Estate services and maintenance managers (familiar with gas boilers), are key to train and win-over

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Appendix 1

Homebuilder Interviews (Learning Cards)

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HAYFIELD

Berry Hill Road
Adderbury
Oxfordshire
OX17 3HF

hayfieldmanor@hayfieldhomes.co.uk
0800 161 5414

HAYFIELDHOMES.CO.UK

EPC A Rated Show Home, Adderbury, Oxfordshire

Overview

- 175 homes per year
- Regional SME home builder
- Semi-rural setting
- Mid to upper private market
- 100% heat pumps & u/floor heating
- FHS Improved fabric & EV charging
- Solar PV (site specific option)
- 6-year experience (FHS type homes)

Pain Points

- Getting HP design right
- Ensuring correct HP specification, installation & commissioning
- Initially used split HP system, but moved to monobloc HP
- HP trades people competency
- Promoting energy saving costs

Success Factors

- Promote carbon savings of home not energy cost savings
- Manufacturers sign-off HP installs
- QA & CC processes/dept restructured by S&M Director to ensure a customer focused experience
- Reservation process (critical stage), to walk customer through detail
- Competent and known HP trades people on sites only (mandated)

Learning Points

These learnings are not an admission or endorsement of any solution, technology or approach used by the developer.

Reservation Process

- Critical stage, explain and manage expectations lifestyle changes, low temp heat format, energy bill expectations, record for NHQB compliance

Leadership

- Sustainability and low carbon principles are embedded in business strategy, product offering and legacy
- CEO/Leadership team are advocates

Heat Pump Learning

- All key staff trained at HP school (Daiken)
- QA staff set up heat pump timings, temperatures to suit buyers' preferences (f-2-f)
- Only use monobloc system, with twin core pipes and minimal below floor joints
- Location is key: noise, patios, access, near home
- Manufacturer signs-off HP installation
- Design is critical– don't undersize systems
- Offer a service package to customers
- Employ their own HVAC engineer

Hayfields Dos

- Engage early with buyers, key stage is at reservation meeting point
- Continually educate and manage consumer expectations
- Only use competent HP installers

Quality Assurance

- HP tradespeople are trained and registered, zero tolerance for use of nonskilled people
- QA & customer care is independent of construction, governed by Group S&M Director (client facing)
- HP manufacturer sign-off installations

Sales & Marketing

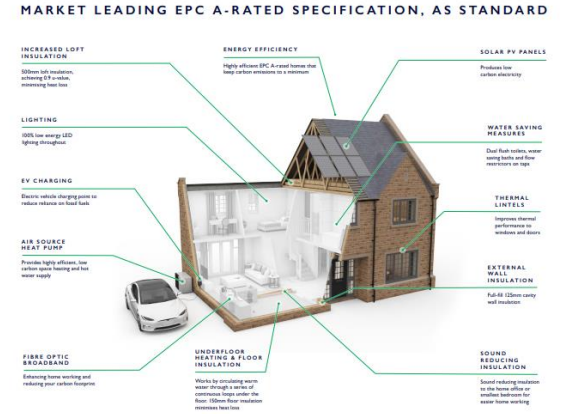
- Promote homes as EPC A-Rated
- Major on low carbon, not reduced energy bills
- Explain features and benefits very well
- Differentiate on sustainability and legacy
- Knowledgeable and competent sales teams
- Defined show home walkthrough process

Customer Care & Handover

- Spend time educating & hand holding buyers on, low temp radiators & continuous running
- Additional support for elderly or vulnerable
- Home demo is one week before occupation, with as many follow ups and 24/7 access to c/care manager
- Winter visit provided for differing set up needs

Hayfield Don'ts

- Promote energy bill savings
- Rely on construction, to manage QA & C/Care
- Wait to explain things at handover stage



Low Carbon features & benefits explained in sales literature

Carbon impact, versus secondhand home, promoted in sales literature

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Hill

HOLLYMEAD SQUARE | ZERO ENERGY BILLS FOR FIVE YEARS GUARANTEED*

Overview

- 2,000 homes per year
- Regional developer/contractor
- Urban and edge of town setting
- Private sale and affordable rent
- 25% heat pumps & u/floor heating
- FHS Improved fabric & EV charging
- MVHR preferred over D-MEV
- Zero bill trial - PV with battery storage
- 4-year experience (FHS type homes)

Pain Points

- Getting HP design right
- Ensuring correct HP specification, installation & commissioning
- Solar PV design to maximise output
- HP trades people competency
- Learning curve on zero bills strategy
- Initial sales team training
- Initial defects in HP systems, settings, leaks, callbacks

Success Factors

- Promote energy cost savings & zero bills benefit
- Competent and known HP trades people on sites only (mandated)
- HP and zero bills training for sales & customer care staff
- Established and proven HP specification and supply chain

Learning Points

These learnings are not an admission or endorsement of any solution, technology or approach used by the developer.

Leadership

- Sustainability and low carbon are embedded in business strategy, product offering and legacy
- CEO/Leadership team are advocates

Heat Pump Learning

- Product performance can vary between manufacturers, cycle times, COPs, settings
- Must specify twin insulated pipes and minimal below floor joints, to eliminate callbacks
- Smart cylinder with PV diverter to optimise power
- Location is key: noise, patios, access, near home
- Design is critical– don't under-size systems
- Sales teams trained on FAQs and user behaviour changes and expectation management

Solar PV Learning

- Roofs simplified to maximise output, no hips & south, east/west plot specific design
- Battery storage internal & linked to Smart EVs
- DNO challenges with connection export/import cabling, metering, standards & sub station

Hills Dos

- Fully evaluate HP supply chain & products
- Educate & manage consumer expectations
- Only use competent HP designers & installers
- Provide 24/7 access to information for buyers

Quality Assurance

- HP tradespeople are trained and registered, zero tolerance for use of nonskilled people
- Quality managers trained and competent, regular inspections, things to look for and go/no-go points

Sales & Marketing

- Promote homes as zero bills with Octopus Energy
- Major on energy efficiency & local PV generation
- Explain features and benefits very well
- Differentiate on energy & sustainability
- Knowledgeable and competent sales teams
- Sale rates & values exceeding targets

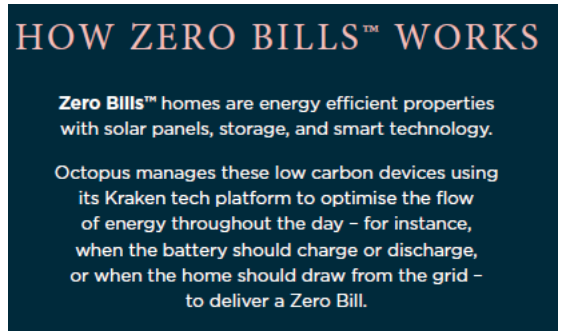
Customer Care & Handover

- Spend time handholding buyers on expectations, low temp radiators & continuous running
- Provide online user videos, HUGs and info portal
- Home demo is one week after occupation, follow ups after 7 days and 28 days
- Close liaison with affordable partners' asset/maintenance teams at handovers

Hills Don'ts

- Don't go cheap on HP specification and design
- Rely on subbies, without strict QA controls
- Wait to explain things at handover stage

Zero Bills Homes, Hollymead Sq, Newport, Essex



Energy efficiency & zero bills promoted in literature

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SPITFIRE HOMES

FAIRMONT BISHOP'S CLEEVE

Each home at Fairmont is designed to be highly efficient, reducing carbon emissions and helping to save you money on your energy bills.

Overview

- 200 homes per year
- Regional SME developer
- Semi-Rural & urban setting
- Private sale and affordable rent
- 100% heat pumps & u/floor heating
- FHS Improved fabric & EV charging
- Solar PV (site specific option)
- 3-year experience (FHS type homes)

Pain Points

- Getting HP design right, occasional hot water shortfall
- Ensuring correct HP specification, installation & commissioning
- HP trades people competency
- Learning curve with HP suppliers
- Initial sales team training
- Initial defects in HP systems, settings, leaks, callbacks

Success Factors

- Promote energy cost savings & manage expectations
- Competent and known HP trades people on sites only (mandated)
- HP training for sales & c/care staff
- Established and proven HP specification and supply chain
- Fast response to HP issues/defects

Learning Points

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Quality Assurance

- Spend time on HP heating and hot water set up, set back times & summer/winter operating
- HP tradespeople are trained and registered, zero tolerance for use of nonskilled people
- Quality managers trained and competent, regular inspections, things to look for and go/no-go points

Heat Pump Learning

- Steep learning curve (3 years), theft is an issue
- Product performance can vary between manufacturers, cycle times, COPs, settings etc.
- Must specify twin insulated pipes and minimal below floor joints, to eliminate callbacks
- Location is key: noise, patios, access, near home
- Design is critical– don't under-size systems
- Teams were trained at Daikin school
- Use plot specific HP tracker log to manage defects, resolutions and recurring issues
- Educate buyers that bills may not be lower
- Generic set up at handover, temps & set back times, then tweaked to suit occupant preference
- Extra visit to explain winter operation difference

Spitfire Dos

- Fully evaluate HP supply chain & products
- Educate & manage consumer expectations
- Only use competent HP designers & installers
- Provide additional winter operation visit

Leadership

- Sustainability and low carbon are embedded in business strategy, product offering and legacy
- CEO/Leadership team are advocates

Sales & Marketing

- Promote as sustainable and energy efficient
- Educate buyers that bills may not be cheaper, depending on where they are moving from
- Explain features and benefits– no consumer negativity, 85% customers see a cost saving
- Sale rates & values good in difficult market

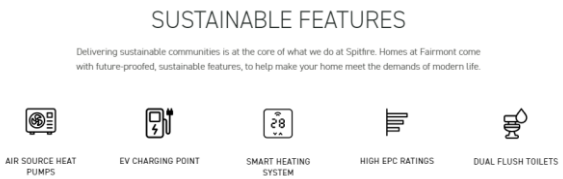
Customer Care & Handover

- Use videos and home living guide to explain technology, expectations, low temp radiators & continuous running format.
- Recurring HP fault codes, due to poor heat pump set up/system, mitigated with supplier
- Provide online user videos, HUGs and info portal
- Home demo is one week after occupation, follow ups after 7 days and 28 days.
- Additional winter visit included.

Spitfire Don'ts

- Don't go cheap on HP specification and design
- Rely on subbies, without strict QA controls
- Wait to explain things at handover stage

High EPC rated homes, Bishops Cleeve Cheltenham



Sustainability features promoted in literature

'The Triangle', Europa Way, Warwickshire

As part of a land purchase contract, we have worked with Vistry Partnerships to provide 54 all affordable homes on a 3.25 acre site, located at Europa Way, Leamington Spa. The new housing scheme provides a high level of energy efficient 1, 2, 3 and 4-bedroom houses and bungalows, across all tenures for social, affordable and shared ownership homes.

Overview

- 16,100 homes per year
- National developer (multiple brands)
- Partnership housing model
- Affordable Homes
- 10% heat pumps (1,200 p/a)
- FHS Improved fabric & EV charging
- Solar PV & U/floor heating (option)
- Private Homes – FHS trials ongoing

Pain Points

- Learning curve with HP suppliers, designers & installers
- Educating HAs on new technology
- Tennant handovers and education
- A/Care support to HA post-handover
- Relying on letting agents, to educate renters
- Winning over HA estate services and maintenance teams

Success Factors

- Established and proven HP specification and supply chain
- Early engagement with HA and estates/maintenance teams
- Clear responsibilities
- Exceptional 2-stage handover and home demonstrations
- Plenty of tenant education and 24/7 hand holding, fast response to issues

Learning Points

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Developer Customer Care

- 24/7 after care support is offered to HA (2 years after handover)
- Out of hours and emergency helpline provided
- Access to subbies used is agreed with HA
- Developers' subcontractors used to respond to defects
- Follow up sessions are arranged with HA

Developer Handover to HA

- Provide HUG, videos and access to online portal
- QR codes increasingly being used to tag equipment for ease of identification and maintenance
- Handovers are phased over clusters of homes
- Home demo of each home type is provided at handover to HA
- Site managers undertake handovers with trades representatives present

HA Handover to Tennant

- Tenants' familiarisation session held (groups of up to 30) to educate new home features & benefits
- Letting agents often used, so additional person in the handover/education change. Lack understanding of technologies and rely on letters/contracts, rather than face to face.
- Home user guide to explain technology e.g., low temp radiators & continuous running format
- Home demo is same day as occupation (not ideal) future sites will move to 7 days after occupation
- Tennant self-learning and troubleshooting relied upon– HP video link provided

Energy & Carbon Promotion

- Positive uptake from HAs, asset value, NZC compliance, and fuel poverty
- Tennant bills are lower (from old to new home)
- Sustainability features promoted in HUG
- Leaders are committed to NZC outcomes

HA Tennant Care & Maintenance

- Preference to use radiators, as opposed to u/floor heating, due to ease of repair, familiarity and cost
- Tenants commonly switch off systems, due to mindset to save on energy bills, needs constant education on continuous operation of HP
- No specific follow-ups after handover, typically reactive response to tenant issues – no winter operating visit
- Trades talk training is used to educate staff and community groups, during honeymoon period
- Additional tenant hand-holding and support needed, often sacrificed due to resource gaps
- From learning, investigating changing processes to provide better support after occupation
- Asset & maintenance managers require training on new technology and defects resolution
- Estate services and maintenance managers (familiar with gas boilers) are key to win-over
- Issues have arisen with PV systems i.e. bill expectations & energy tariffs (Rented and shared ownership)
- Reactive support for elderly, vulnerable and foreign tenants provided, but more proactive help is needed
- Home demo first tenant benefits most

Mixed tenure FHS homes, for rent & shared ownership

Vistry Don'ts

- Don't go cheap on HP specification and design
- Rely on subbies without strict QA controls
- Rely on letting agents to inform tenants
- Pass the buck, have clear agreements
- Bombard tenants at handover stage or subsequent tenant demos

Vistry Dos

- Fully evaluate HP supply chain & products
- Educate & manage HA/Tennant expectations
- Only use competent HP designers & installers
- Ensure dual handover points are very effective
- Ensure HAs have technology aware staff, skills and processes to deal with tenant issues
- Provide plenty of hand holding and support

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CG FRY & SON BUILDERS

Nansledan, Newquay, Cornwall , TR8 4FA

Overview

- Small housing developer & contractor (200-300 homes p/a)
- Mixture of private sale & HA rent
- 100% heat pumps (since 2021)
- U/floor heating for private sale homes
- Radiators throughout for HA units
- PV site specific (battery optional)
- Explored many HP options/specs
- 10-years HP learning

Pain Points

- EPC rating downgraded for HP
- Complexity of HP system and compatibility with UFH controls
- Don't promote energy saving costs
- MVHR requires additional input at design, construction and after care stages

Success Factors

- Promote carbon savings of home, not energy cost savings
- Have clearly defined HP specification & design process via single supplier
- Building relations & confidence in HP supplier, product & s/contractors
- Major on keeping traditional/local design kerb appeal, avoiding contemporary fenestrations

Learning Points

These learnings are not an admission or endorsement of any solution, technology or approach used by the developer.

Heat Pump Learning

- HP use driven initially by off gas rural sites, which is common solution in Devon/Cornwall
- Have noticed dramatic change in customer preferences where gas boilers now undesirable and perceived to be out of date
- Some consumers are surprised/disappointed when realise there is no gas hob
- Built up a credible, robust and detailed HP construction & trades specification over many years, as their "go-to bible"
- Focus on HP design rather than ensuring manufacturer sign-off or verifying credentials of installers
- HP manufacturer provided design support ensuring correct components of the system, were specified.
- Leave installation to individual subcontractors
- Have worked with the same s/contractors for 20-30 years undertaken the same journey together

Solar PV learnings

- Purchasers very keen on this being included, most expect it in a modern home
- Planners also prefer PV homes, without fully understanding the consumer/grid aspects
- Make clear to customers that not all electricity generated from PV can be used by occupant
- Offer batteries to customers but explain this only reduces demand for a few days

Quality Assurance

- No specific competence requirements but have very detailed trade spec for all trades on site
- This has and continues to evolve, incorporating new learnings

Sales & Marketing

- Sales team are all direct employees, so good familiarity with homes and all technologies
- Design and technical brief for all sales staff for each site (why entrance located where it is; why HPs used etc.)
- Little evidence of change in valuation or sales rate with more sustainable homes
- Promote carbon benefits over lower energy bills

Customer Care & Handover

- Community word of mouth tends to be more effective in helping occupants to understand tech compared to written instructions
- Provide client pre-handover (2 weeks before) & handover meeting with sales and site manager
- Complete a return visit and have customer survey collected 14 days after occupancy, prompting resolutions via site manager
- A winter visit or additional visit for elderly/vulnerable people is provided, if requested.
- More support to educate consumers on MVHR

Low energy/carbon homes major on keeping traditional, local, design and placemaking kerb appeal, whilst avoiding ill placed contemporary fenestrations

CG Frys Dos

- Have a detailed and reliable HP trade spec
- Have trusted, engaged and reliable subcontractors, with strong relationships
- Retain local vernacular, whilst providing integrated low carbon technology

CG Frys Don'ts

- Don't go cheap on HP specification, design, and installer subcontractors
- Rely on subbies without strict QA controls
- Wait to explain things at handover stage

Ashton Rise, Bristol

Exciting new housing development in Ashton Vale, South Bristol

"The house is just everything I want and more, and I'm so pleased I decided to put in some research and reserve so early on. It's in such a convenient location for me too. If I don't fancy driving to work, there is a bus stop just a few steps from my front door where I can catch a direct Metrobus to work."

Overview

- Mixed private and rented (majority affordable for rent) contractor
- Build homes for customers (such as an HA/LA or private company which manages the asset)
- Majority of housing projects are all electric/heat pump led
- Use mixture of ground source system, ASHP, compact HPs or heat/ambient loop network with a central heat source and mini-HPs in plots

Pain Points

- The controls for HP systems are often considered late and adopted spec (from ERs) more geared to gas boilers – so unclear client expectations
- HP system procurement is often still a third package (outside/between mechanical and electrical), leading to significant coordination issues & commissioning risk

Success Factors

- Get customers liaison officer involved to explain HP system, link to end-user
- Aftercare team involved asap
- Promote shared learning
- HP manufacturer directly upskills & educates installation % maintenance team
- Building performance monitoring yielding feedback for ongoing improvement

Learning Points

These learnings are not an admission or endorsement of any solution, technology or approach used by the developer.

Supply chain integration

- Build relations and test standardised approaches with HP suppliers. Piloting specific solutions and rolling these tried and tested solutions out again
- Where possible, check feasibility of integrated electrical and plumbing packages with HP system
- Integrated supply chain partners can provide full solutions – design, install and commissioning works, reducing risk
- Cost decisions can often favour splitting works into separate packages (over integrated solutions) but can increase risk and cost downstream

Developer Handover to HA

- WD train HA maintenance and customer liaison teams through training and handover workshops
- This included WD supply chain partners, e.g., to explain controls and how HP system works
- HA takes on customer interface after this
- MUGS - maintenance user guides are provided to the customers' long term maintenance teams
- HUGs – home user guides, as well as short 'how to' videos are provided to home users

Monitoring

- WD has wide ranging monitoring pilots to inform learning on different system, often collaborations between customer, HP manufacturer, and building performance team
- Monitoring systems can inform long term maintenance activities through portfolio view dashboards– some can be integrated with HPs

After Care & Maintenance

- After care team involved from late RIBA stage 4, early 5
- Customer care team can provide useful long-term considerations they want factored in
- Promote shared learning, ideally using same providers/similar system to previous schemes
- Once home completed customer care involved for around 1-2 years (covering the specified contract defects liability period)
- Customer care team hotline with links to supply chain, so same team that installed system will come to deal with problem
- Put together a basic maintenance user guide for maintenance teams
- Has CRM/register of issues which can be analysed according to frequent issues (mechanical, occupant understanding etc.)
- Customer care team translates HUGs into different languages if necessary for tenants

Willmott Dixon Don'ts

- Have HP system as a third leg outside mechanical and engineering packages, when they can be integrated
- Be tempted to split packages for cost saving, without fully understanding interfaces and pinch points

Willmott Dixon Dos

- Follow up with home-users, in addition to HUGs, use training videos via QR codes on tech, so easily accessible
- Make HP system controls as simple and intuitive as possible
- Manage HA expectations & provide support post-handover
- Robust commissioning sign-off with QA checklists
- Thoroughly assess procurement package interfaces and manage these well
- Undertake BPE monitoring to gather data to improve outcomes

Melton Road, Brooksby, LE14 2LJ

Overview

- Large housing developer ~4,000 homes/annum
- England-based
- Nationwide coverage (except NE and SE)
- Traditional build (no timber frame, pure brick and block)
- Brooksby site first foray into HPs (begun January 2022)

Pain Points

- Security issues with HPs
- Larger radiators needed
- ASHP positioning when home not specifically designed for ASHPs

Success Factors

- Use manufacturer to have detailed conversation directly with customer rather than own construction/sales team
- Don't emphasise FHS features of homes or make promises on lower bills
- Consistency across plots when possible (e.g., solar panels used) eases installation processes as well as QA procedures

Learning Points

These learnings are not an admission or endorsement of any solution, technology or approach used by the developer.

Heat Pump Learning

- Main issue around HP security with some stolen from plots– now ensure properly secured
- Some trial and error with where to place HP placement in property
- Have done monitoring to compare show homes with gas and ASHP and find similar running costs
- Use an external heating designer engineer who uses HP outputs to ensure radiators are correct size/spec ensuring alignment of design and HP
- Prefer radiators to u/floor heating from cost and ease of installation perspective and have had no complaints despite slightly larger radiators

Solar PV learnings

- Plan for all future plots to have solar PV
- Contract with PV supplier, specifying preferred panels ,ensures consistency across plots and same installation process
- One supplier provides consistency of quality manuals/procedures to guarantee correct fitting

Quality Assurance

- Have a QA process checklist which covers correct HP installation
- Use manufacturer to ensure installation is correct

Sales & Marketing

- Avoid emphasising FHS/sustainability features of homes
- Still find location, transport links, schools etc. is most important for customers
- Avoid dialogue on bills and giving any concrete numbers

Customer Care & Handover

- Site manager holds pre-handover meeting with customer circa 3 weeks prior to handover of the property
- Have key touch points timeline post-handover (day 1, day 3, day 7 etc. with personal contact extending to week 30)
- After this automated emails for key reminders (e.g., reminder to get boiler serviced on one year anniversary)
- Get HP supplier to meet directly with customer post-handover and explain how system works
- No set return visits but are flexible for occupant needs
- Get suppliers to provide information leaflets for occupants
- CRM system to log different issues as they come up
- Adhere to NHQB, identify vulnerable customers early in customer journey to sales and construction teams

Bloor Dos

- Focus on facts and be clear in messaging to ensure expectations not too high in terms of performance/bills
- Give opportunity for subcontractors to use sites (e.g., with ASHP) to provide their staff with basic training (e.g., correct install etc.)

Bloor Don'ts

- Don't wait for supply chain to be ready for FHS2025. Important to be proactive → check supply chain will have necessary training completed by time FHS2025 comes in

Ockford Ridge, Godalming, GU7 2NR, England

Overview

- Thakeham is a medium-sized developer 900- 1,300 homes/annum
- Multiple sites with HPs installed over last four years
- Client for project in Godalming was Waverley Borough Council
- Three sites with different specs
- First two with gas boilers
- Final phase with ASHPs (not yet complete)
- Council's first net zero carbon development scheme
- Timber frame construction, double glazing, solar panels, WWHR & HP

Pain Points

- Compatibility of control system with ASHPs
- TRVs on radiators can affect HP performance, ensure compatible heating controls with HP

Success Factors

- Ensure approved installers are used
- Use unit manufacturers to educate customer facing teams

Learning Points

These learnings are not an admission or endorsement of any solution, technology or approach used by the developer.

Heat Pump Learning

- Important to ensure that control system is compatible with ASHP
- Manufacturer of unit leads design process and determines the controls used
- Also considering trialling integrated approach, with MVHR, HP, and cylinder combined

Sales & Marketing

- Thakeham arranged for unit manufacturers to come to site to educate local council team managing the properties
- Stress wider positive environmental impact of these homes rather than lower bills

Valuation

- Valuation uplift on Thakeham zero bills sites (Burgess Hill development) compared to other properties in area
- But no significant increased values due to cost of this technology, instead see it as achieving future-proof spec
- Thakeham see that first time buyers and younger generation are more likely to expect homes with sustainable tech

Quality Assurance

- Waverley BC ensure that approved installers are used, greater warranty because of this accreditation
- Waverley BC also use own clerk of works consultants to support/check site QA process

Customer Care & Handover

- Once tenants have moved in, Thakeham will help with customer education and will offer return visits as requested
- Council produces a HUG, focus on diagrams, pictures & video walk through explaining what the equipment is for and how to use it
- Install a smart thermostat to monitor how tenant uses property & how ASHP performs
- Can use this data to contact customer and explain how they can make energy savings (e.g., if system tells council tenants are turning system off rather than turning down)
- All tenants have a housing officer with the council as a point of contact
- Icons (A5 laminated sheets) in property (e.g., on fridge) containing contact info regarding potential issues
- Customers and stakeholders able to visit example property prior to occupation

Thakeham Dos

- Simplify HUGs with diagrams
- Smart thermostats can be used to help educate customer on how to use tech more efficiently
- Council/HA partners are skilled on HP systems & undertake additional site QA

Thakeham Don'ts

- Leave customers to work out tech for themselves
- Sell homes on basis of energy savings (unless Zero Bills Solution)

croudacehomes

Willowbrook Park, Didcot, Oxfordshire, OX11 9FT

Learning Points

These learnings are not an admission or endorsement of any solution, technology or approach used by the developer.

Overview

- Medium sized housing developer 500-600 homes/annum
- SE England regional focus- mostly within commuting distance of London
- 5 large sites with HPs
- Didcot site has 13 homes (10 to FHS, 3 to current standard to compare performance)

Pain Points

- Customers don't want to see HP in garden
- Customers still prefer to see heater in home than u/floor and unsure about low temp radiators
- Need for customer education with MVHR
- HP units too small/under-sized for home

Success Factors

- Focus on high-level communication and simplify as much as possible
- Use HP and MVHR manufacturers to install units

Heat Pump Learning

- Initial configuration set up as default but will speak to customer and adjust according to lifestyle
- Get manufacturers to install
- Better to place HP unit to side of house as noisiest time in winter when windows shut/not sat outside
- Don't place HP in way that affects visual aspects of home from point of view of customer- prefer not to see it in the garden
- Use multiple HP manufacturers to avoid supply issues
- Don't go for cheap option and install a unit that might be under sized
- Work with manufacturer to identify appropriate size HP

Sales & Marketing

- Finding more consumer interest in FHS standard homes but location still most important factor
- Advertise homes as built to FHS with various new tech rather than lower bills etc.
- Manufacturer of MVHR and HP units brought in to provide a day of training for site manager, sales, and CC team

Handover

- Important not to overwhelm customer with information, simplify as much as possible
- First session to educate and a second return session to identify things customers struggle with (ideally in winter when units are in operation)
- Site manager leads home demonstration, first touch point with customer
- Create simplified HUGs for all units and tech (fewer pages and more diagrams)

Customer Care

- Commissioned BRE to carry out POE
- One-month post-occupancy return visit with sales and CC team
- Return visits every three months for 1 year due to different use according to seasons
- Have an in-house IT system on a plot-by-plot basis. Provides guidelines for all tech in homes, allows customers to log in and ask questions & download relevant info
- CRM tracks issues (lack of customer understanding identified as main problem currently)
- Simplify even more for elderly/vulnerable and visit more frequently
- Customers provided contact number, for both manufacturer of HP units and CC team

Croudace Dos

- Simplify instructions to customers as much as possible and allow customers to learn from experience of operating units
- Focus on what customer really needs to know

Croudace Don'ts

- Overwhelm customer with too much information

Barton Quarter, Lancashire, BL6 5UE

Overview

- Large housing developer 7,000-12,000 homes/annum
- Started with FHS/HPs two years ago in NE England
- 5 large sites with HPs
- Barton Quarter site achieves FHS with 200mm cavity masonry and trials different monobloc ASHPs

Pain Points

- Inadequate handover information for FHS related tech
- Subcontractor competency around HP design and install
- Customer expectations that low carbon = low running cost
- Customer using YouTube for instructions which might not be appropriate for their HP design

Success Factors

- Technical onsite support from system designer/manufacturer
- Sales team need to have a detailed understanding and be very confident with all relevant tech
- Site manager needs to be knowledgeable in terms of fittings and installation commissioning

Learning Points

These learnings are not an admission or endorsement of any solution, technology or approach used by the developer.

Heat Pump Learning

- At beginning of developer journey, installed HPs too large for property
- Had controllers that were too complicated (created micro-zones→ HP was cycling more often than it should have done)
- Cylinder compatibility issues
- Install is key, simplify design as much as possible to derisk install errors

Quality Assurance

- Have mandated requirement that the plumbing contractor, HP installers, and designers must be MCS certified
- Prescriptive on first fixed position of pipework for radiators (where it goes from and to, and where it is rooted) to reduce number of fittings
- CRM & Customer care IT system tracks every call out and includes potential to score suppliers and subbies, providing traffic light system to evaluate them

Sales & Marketing

- Avoid advertising homes as low bills
- Emphasise EPC rating (B) and carbon savings, explain that bills will probably be more affordable than average D rating
- Explain how solar PV and adjusted behaviour can benefit consumer, free of charge energy
- Use short surveys to track confidence of divisional teams selling ASHPs, whether they feel they are adequately trained and competent.
- Q&A booklet to help upskill sales team prepare for likely consumer queries

Customer Care & Handover

- Commercial, technical, and sales team, within each division, all receive training on technologies from manufacturers
- Focus on what consumers need to know
- All departments signed up to customer first initiative
- Subscribe to NHQB, and ensure FHS standard technologies match processes/compliance
- Identify vulnerable individuals or additional support needs early, and adapt way they sell to reflect needs
- Minimum of four site manager touch points for non-stock homes and weekly communication
- Includes a pre-plaster site visit (also as show home for customers buying stock home) so customers can see pipework, wiring etc.

Bellway Dos

- Focus on design and install to avoid problems down the line
- Ensure all consumer facing staff are confident with technologies

Bellway Don'ts

- Leave customer self-education to themselves or overwhelm them with information – focus on what they need to know
- Use designers or subcontractors without necessary competence or validation
- Promote energy savings costs, focus on carbon savings

Future Homes Hub

Appendix 2

Best Practice Examples & Information

Consumer Engagement Process

Courtesy of Vistry Group & Bovis Homes

Consumer Engagement Process

H
HAYFIELD

A Personal Service

At Hayfield, our Customer Care team are committed to delivering a quality service once you have moved into your new home, and to accompany you on your Hayfield journey.

This document sets out our commitment to you and the level of customer care we seek to achieve.

Courtesy of Hayfield Homes

AFTER RESERVING YOUR NEW HOME

Once you have completed all of your reservation paperwork, selected your choices and any extras that you may have wanted for your new home and exchanged contracts, you will be invited to attend a handover meeting with your dedicated Customer Care Manager.

Your Customer Care Manager will become your new point of contact throughout the remainder of your Hayfield journey, including anything to do with the build of your new home. They will keep you updated at regular intervals and accompany you on the visits to your new home following exchange of contracts.

BEFORE YOU MOVE IN TO YOUR NEW HOME

Our Customer Care team has dedicated Quality Managers who work closely with our build team, checking the progress of the build and standard of finish at key stages in the construction process. As your new home nears completion, our Quality Managers will carry out a detailed inspection of your new home to ensure the Hayfield standard is met. They will also work closely with your Customer Care Manager to ensure that the two-week notice to complete is served, and you are kept up to date of when completion is likely to take place. Please note that completion dates can change frequently, especially during the final build stages of your home.

Once the notice to complete has been served, usually in the earlier part of the week before you collect your keys, your Customer Care Manager will arrange your New Home Demonstration. At your demonstration, we will outline what to expect and how to look after your new home. This will include how to maintain the heating and electrical equipment, as well as informing you about registering your appliances and what to expect once you move into your new home, including shrinkage and the drying out process. As we will provide you with plenty of information to ensure a smooth move, we recommend that you allow approximately 2 hours for this meeting, depending on the size of your home.

We will also give you the opportunity to appoint a suitably qualified inspector (please speak with our team to understand the qualifying factors) to carry out a pre-completion inspection on your behalf before the legal completion date. There may be the opportunity to carry this inspection out earlier if the property is ready and we agree to this.

The inspection should be carried out and recorded in line with the template provided by the New Homes Quality Board. Please note that the inspector must follow site health and safety guidance. This inspection should not delay legal completion and we will respond in line with the New Homes Quality Code.

One of our final stages, before we hand you your keys, involves a Director of Hayfield doing a final check of your new home.

WHEN YOU MOVE IN

On completion day, our team will give you a call to let you know once completion has legally taken place so that you can collect the keys to your new home. Your Customer Care Manager will meet you to hand over the keys and any necessary documentation. You will be offered a follow up Home Demonstration at this point should you need any help with setting up your heating, for instance.

A statement of incomplete works for the development or for your home will also be given to you on completion. This could include information on roads, open spaces and landscaping as well as our commitments under relevant planning consents.

For your peace of mind, your new home comes with a 10-year NHBC warranty and a two-year Hayfield Customer Care period. On the day you move in, your Customer Care Manager will direct you to your Homeowner Documents which are hosted online. These documents will provide you with information about your new home, including a schedule of external and internal finishes, care and maintenance details, information about the NHBC warranty, details of your utility suppliers, our Customer Care contact details and our emergency out of hours service number.

AFTER YOU HAVE MOVED IN

Once you have moved into your new home, your Customer Care Manager will advise you on the procedure for reporting minor defects, and how we classify these, during the warranty period. Hopefully, you will have very few issues once you move in, however, as your home is man-made product built in all-weather conditions, there may be remedial items which require our attention.

At a follow up meeting, usually two weeks after you have moved in, your Customer Care Manager will discuss any defects you have noted since your occupation and how they will be rectified. These will be noted on a dedicated form, with a separate report completed for any other items. These will then be recorded and booked in with our contractors and your Customer Care Manager will confirm when these items are booked in. Please note you may hear directly from some contractors when arranging these works.

Remedial works will be attended to within the hours of 8:00am to 5:00pm, Monday to Friday. We aim to complete most non-urgent defects within a timely manner and will always notify you of any delays the industry may be experiencing. We will endeavour to complete emergency works within 48 hours.

Your Customer Care Manager is your point of contact throughout your two-year Hayfield warranty period and will be in touch at regular intervals to check that you are settling into your new home well.

EMERGENCIES

We define these as problems which are, or seem to be, harmful to your health and safety, security or immediately harmful to your new home.

During normal office hours please contact the Customer Care Team, outside of normal office hours, please contact our Emergency Out of Hours Service number. You will be provided this number on legal completion by your Customer Care Manager. Please do not contact any of our sub-contractors directly. We cannot accept any responsibility for works undertaken without our supervision or instruction.

Home Reservation Point

HAYFIELD
MANOR
ADDERBURY
OX17 3HF

CUSTOMER CARE CHARTER

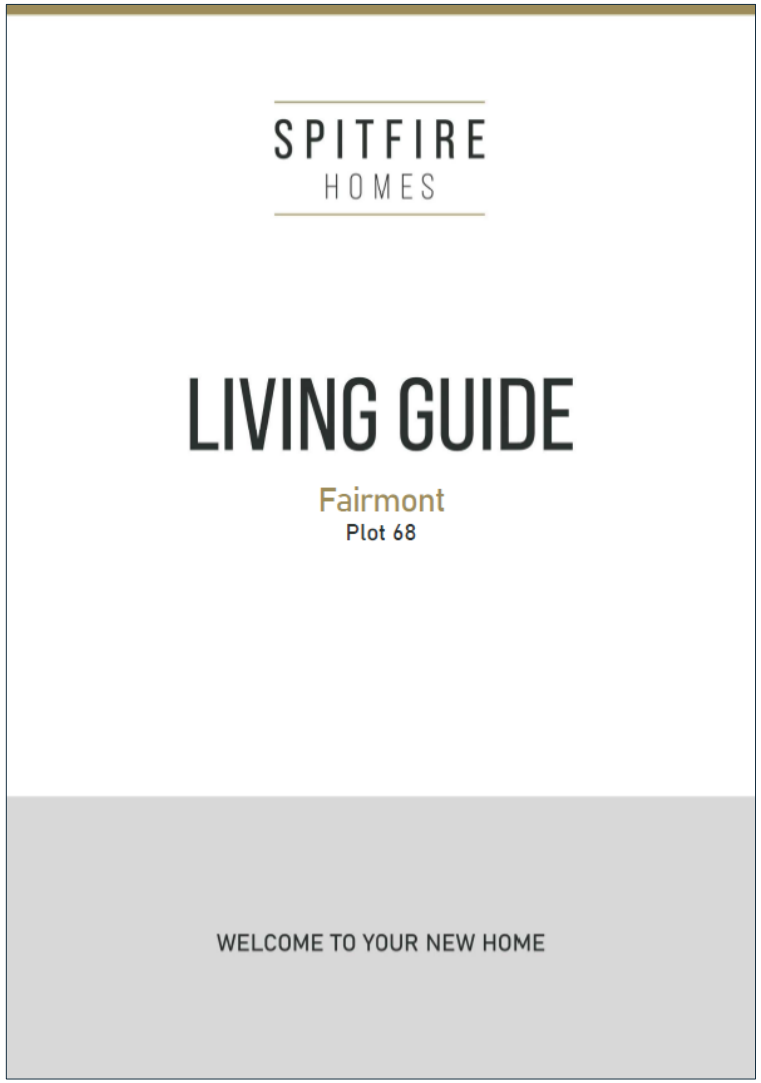
Hayfield will not only deliver you a quality home but are committed to providing you exceptional service at every step of your buying process and beyond. We call this your Hayfield journey and our commitment to you is set out in this Customer Charter.

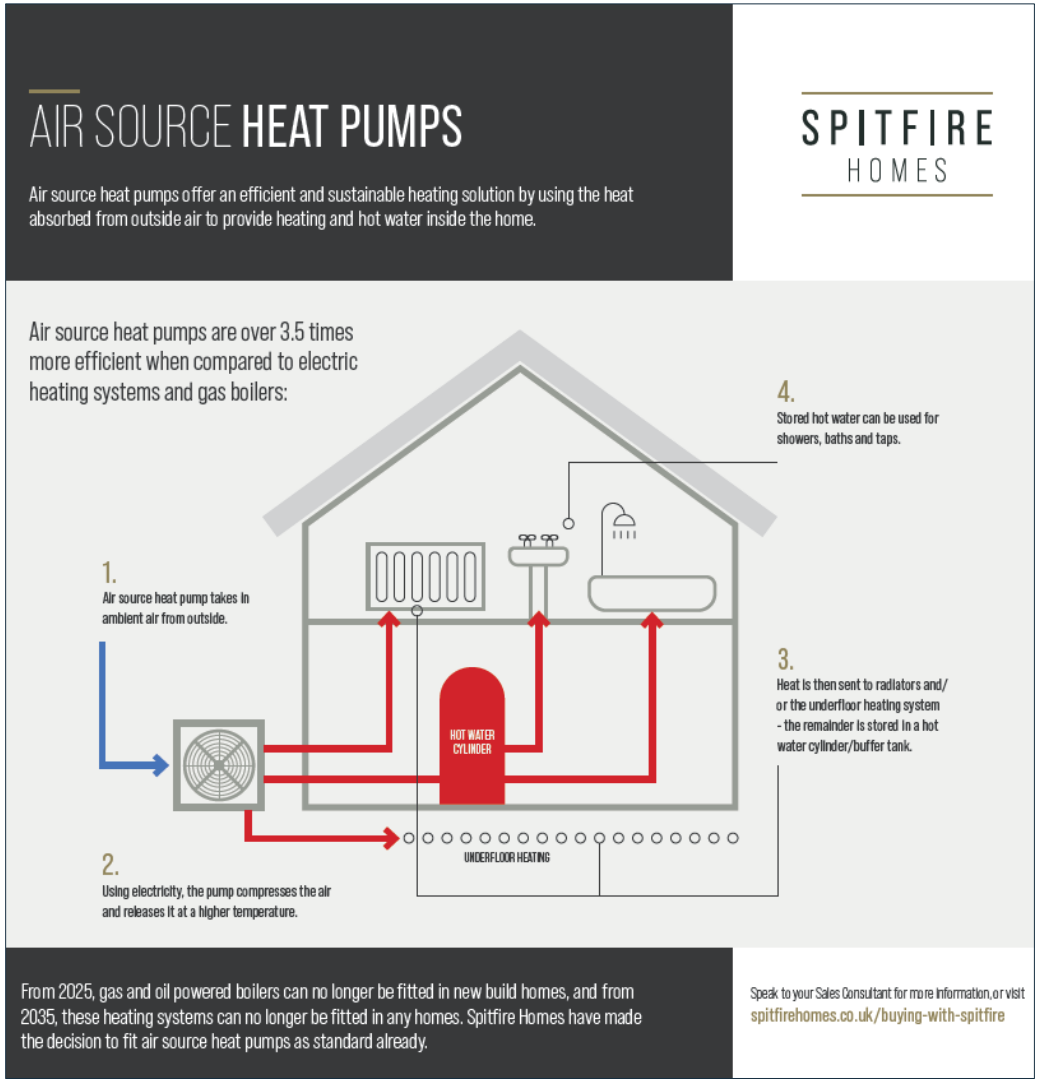
As part of our promise to you, our trained and knowledgeable team will be with you at each step of this process.

• Before reserving your new home, our Sales Development Managers will provide you with full and clear information about your new home and what to expect during your journey so that you can make an informed decision

Courtesy of Heyfield Homes

Consumer Information



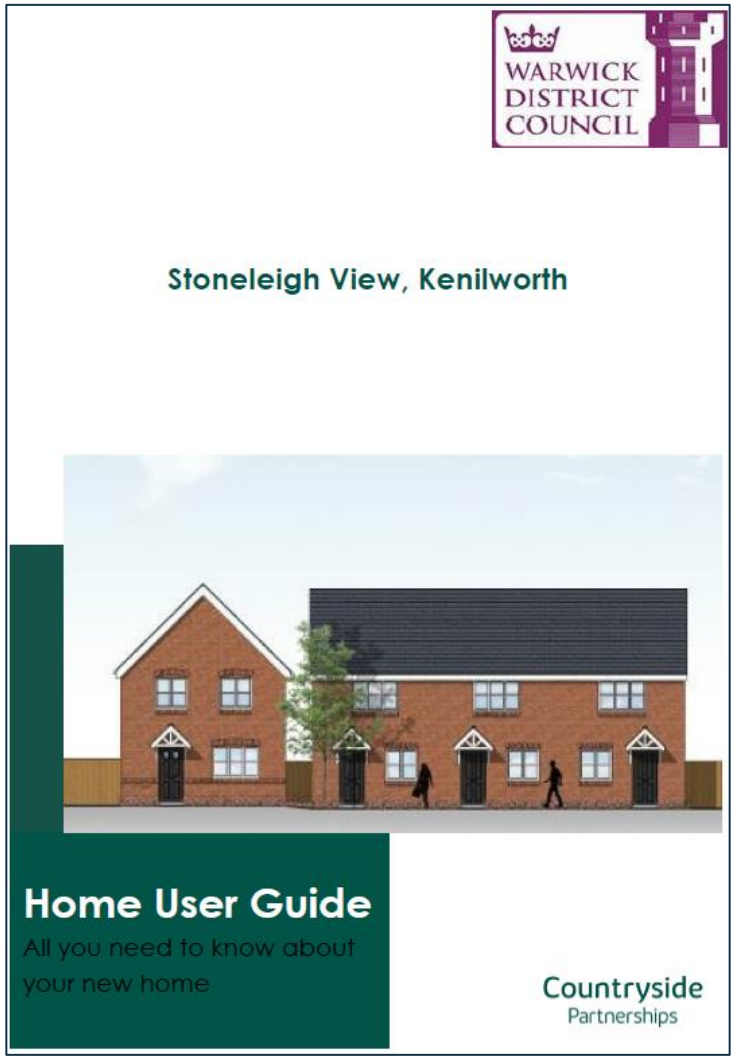


Courtesy of Spitfire Homes

Consumer Information

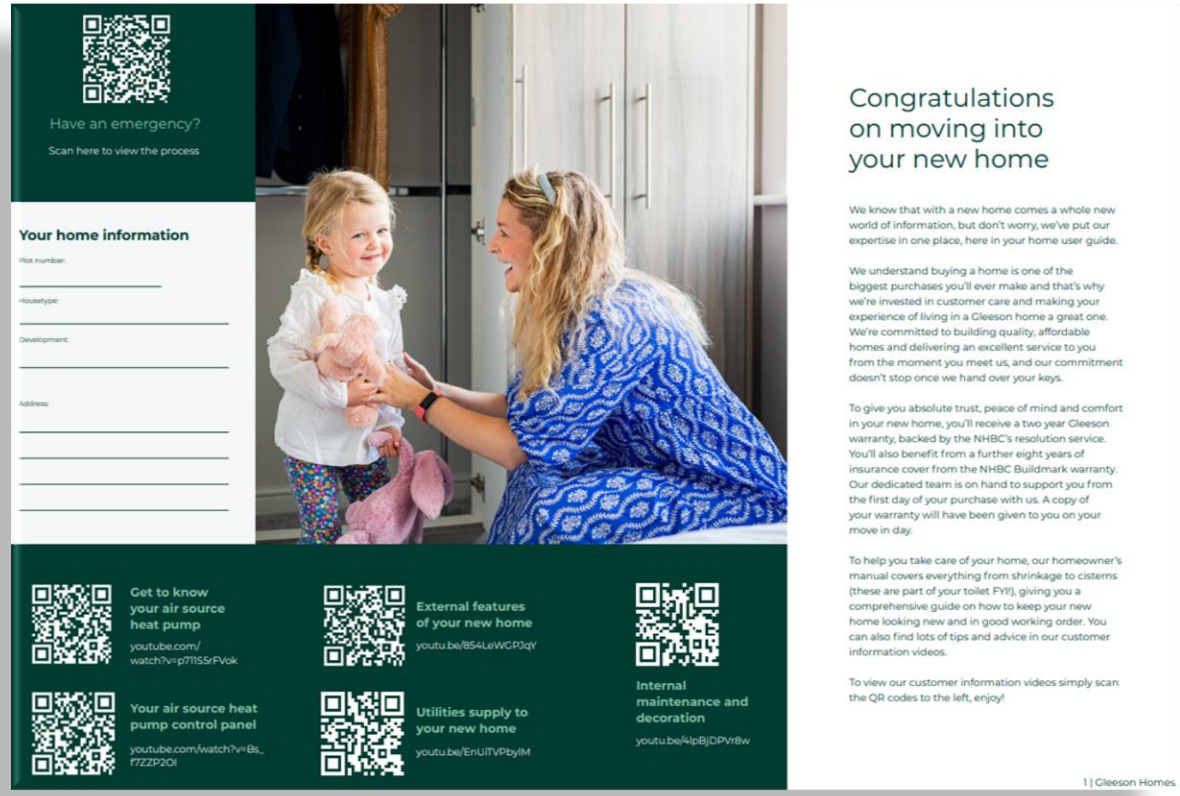
Courtesy of Bloor Homes & Vaillant Heat Pumps

Home User Guide: Heat Pumps & Controls



Courtesy of Vistry Group and Countryside Partnerships

Home User Guide: Heat Pumps & Controls



Have an emergency?

Scan here to view the process

Your home information

Plot number:

Housetype:

Development:

Address:

Get to know your air source heat pump

youtube.com/watch?v=p7115SrFVok

External features of your new home

youtu.be/8S4LeWCPJqY

Your air source heat pump control panel

youtube.com/watch?v=Bs_f7ZZP2OI

Utilities supply to your new home

youtu.be/EnUiTVPbyIM

Internal maintenance and decoration

youtu.be/4IpBjDPVr8w

Congratulations on moving into your new home

We know that with a new home comes a whole new world of information, but don't worry, we've put our expertise in one place, here in your home user guide.

We understand buying a home is one of the biggest purchases you'll ever make and that's why we're invested in customer care and making your experience of living in a Gleeson home a great one. We're committed to building quality, affordable homes and delivering an excellent service to you from the moment you meet us, and our commitment doesn't stop once we hand over your keys.

To give you absolute trust, peace of mind and comfort in your new home, you'll receive a two year Gleeson warranty, backed by the NHBC's resolution service. You'll also benefit from a further eight years of insurance cover from the NHBC Buildmark warranty. Our dedicated team is on hand to support you from the first day of your purchase with us. A copy of your warranty will have been given to you on your move in day.

To help you take care of your home, our homeowner's manual covers everything from shrinkage to cisterns (these are part of your toilet FYI!), giving you a comprehensive guide on how to keep your new home looking new and in good working order. You can also find lots of tips and advice in our customer information videos.

To view our customer information videos simply scan the QR codes to the left, enjoy!

1 | Gleeson Homes

Heating and hot water

Top tips:

- An ASHP is intended to be quiet when running. To limit increases in noise from the ASHP over time, ensure it is maintained annually by a professional installer according to the manufacturer's instructions
- Around once a month, your ASHP will temporarily increase the water temperature in the cylinder to over 60°c. This a safety feature and will eliminate any dangerous legionella that can sometimes accumulate at lower temperatures. This may mean a brief spike in energy usage and noise from the outdoor unit, so if you notice this there is no need to worry - the system will return to your set temperature once the cycle is complete
- Occasionally you may notice water dripping from underneath the unit outside. This is completely normal and you do not need to take any action. It is either a result of condensation or ice melting away after the unit has automatically run a defrost cycle. A soakaway in the ground below the unit will allow any water to drain away safely
- Regularly clean away leaves and other debris from the air intake and outlet located on the outdoor unit outside your home. If the air inlet or outlet becomes blocked, the ASHP will not work efficiently, it will use more electricity than is necessary, and it may even not provide enough heat to your home
- Do not sit on/step on the unit
- Don't place anything above the unit
- Do not insert fingers, twigs or other items into the unit
- Do not cover or enclose the unit (e.g. fence panels, trellis)
- Don't try to maintain the unit yourself, it could damage your unit and invalidate your warranty
- If you experience loss of heating, abnormally high energy bills or fault codes on your thermostat, please contact a qualified technician or your Gleeson Customer Relations Manager
- If you experience low pressure, please refer to our videos on how to re-pressurise. If you are finding that this needs to be done regularly, or see a fault code appear on the controller, please contact a service engineer
- If there is a power cut during a period of extended cold weather, you may notice a slight reduction in system pressure. This is due to valves opening externally which prevents the system freezing. Once power is restored, the pressure can easily be topped up via the filling loop in the cylinder cupboard; 1.5 Bar is the ideal pressure. Please contact a Technician with any difficulties

How to efficienctly use your heat pump

As a general rule, air source heat pumps work best when left at a set, constant internal temperature of around 21°c. However, depending on your lifestyle, it may be more cost effective to utilise the daily/weekly programmer to fluctuate the set temperature slightly.

In the house throughout the day?

If you're home regularly throughout the day (e.g. you work from home), you will be most comfortable and will achieve optimum efficiency by leaving the system at a set temperature, perhaps setting the programmer to reduce the temperature during the night.

Your ASHP is very intelligent and will learn from how long it takes to heat up your home. It also takes into account external weather conditions, so once you've input your preferred temperatures, there is no need for you to intervene.

Your ASHP will continue to tick over in the background, ensuring gradual heating.

Out and about most days?

If you spend little time at home - rushing out in the morning and coming back late - it may be more efficient to allow the system to cool down slightly (approximately 17°c) whilst you are out, and then bring it back up to normal temperature when you're home, e.g. 21°c. The most efficient way of doing this is by using the daily/weekly on your control panel, to set the hours you want and the higher and lower temperatures.

Out during the week and mostly home at weekends?

Again, the daily/weekly programmer can be used to set the temperature to suit your movements. Even if you're out all week, we would discourage turning the system off completely - it is more efficient to keep it at a consistent, albeit lower temperature (approximately 15°c)

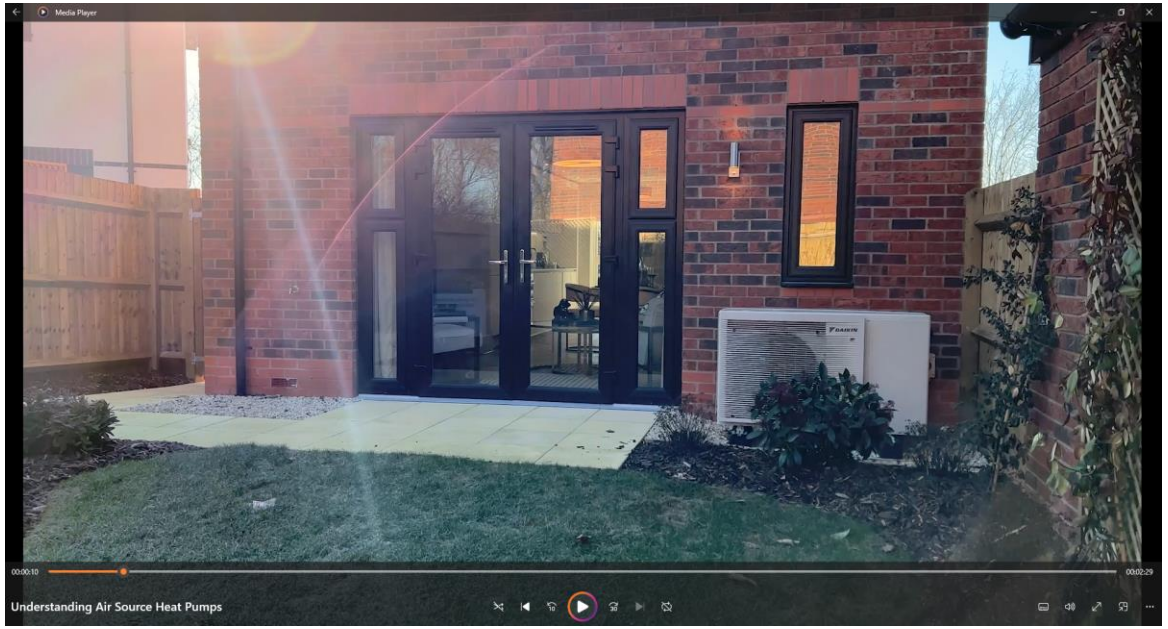
Going on holiday?

When you're heading off on holiday, we could advise selecting the 'holiday mode' and set the controls to bring the temperature back up before you return.

Courtesy of Gleeson Homes

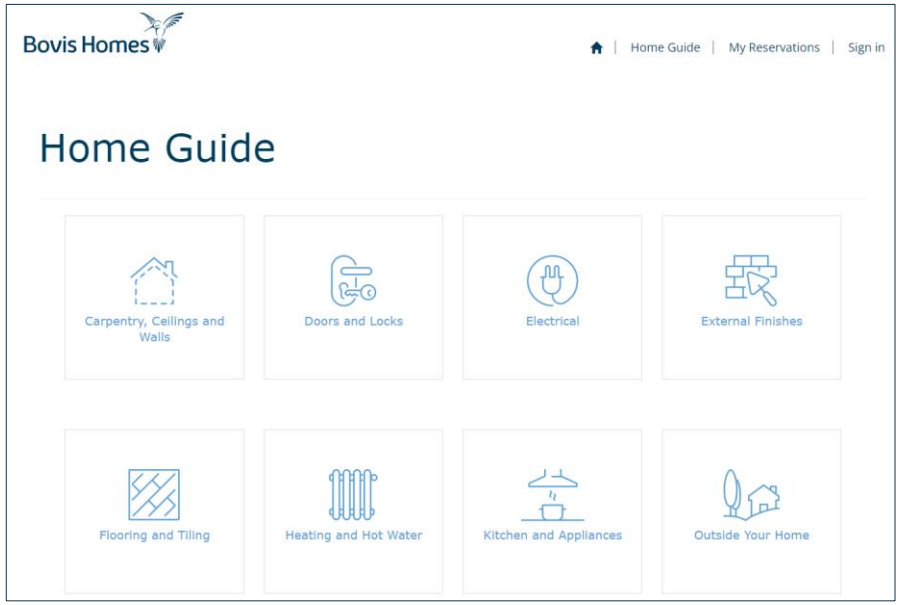
Consumer Videos

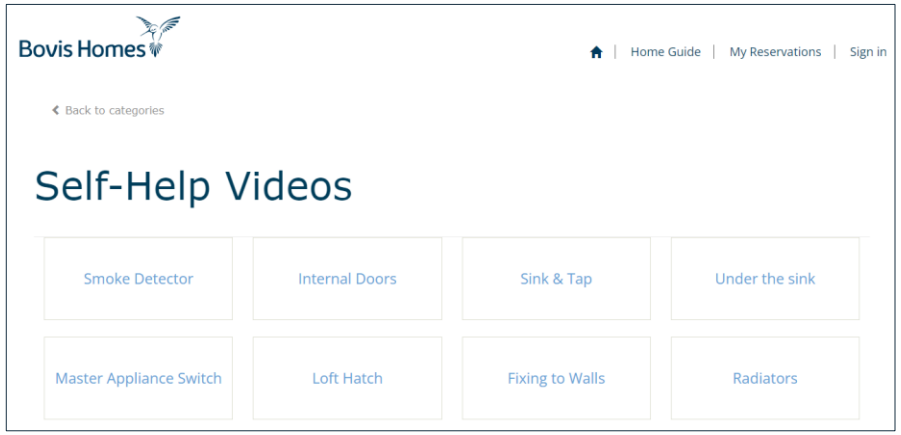
Courtesy of Spitfire Homes : ASHP, PV and EV Charging Consumer Videos

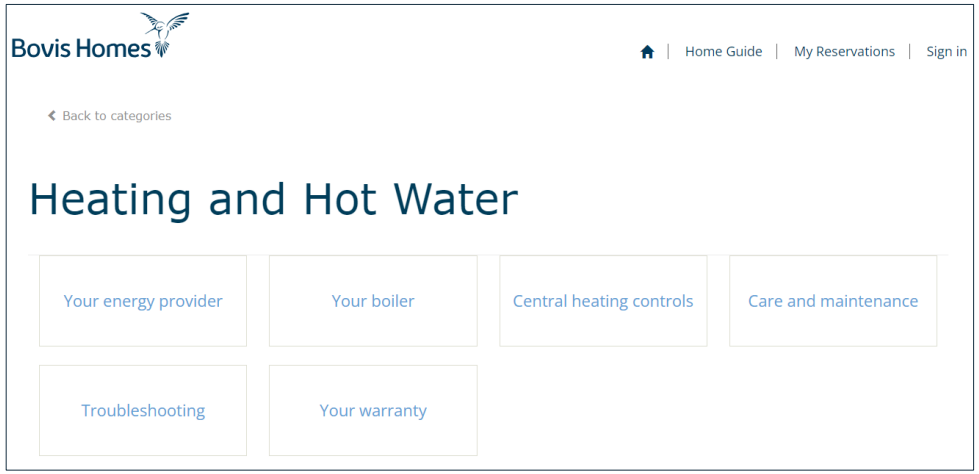


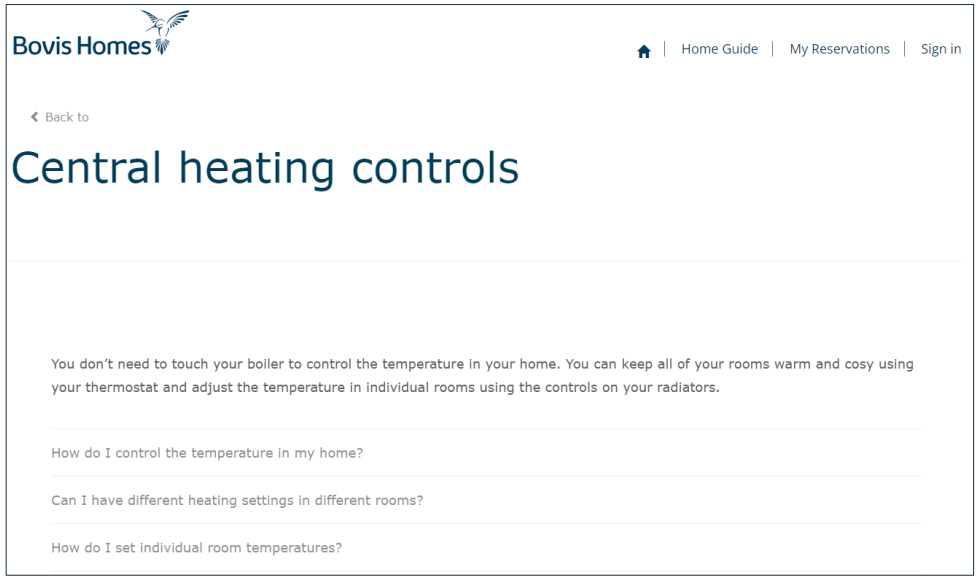
Consumer Online Information Portal

[Home Guide · Customer Self-Service (vistry.co.uk)]









Courtesy of Vistry Group & Bovis Homes

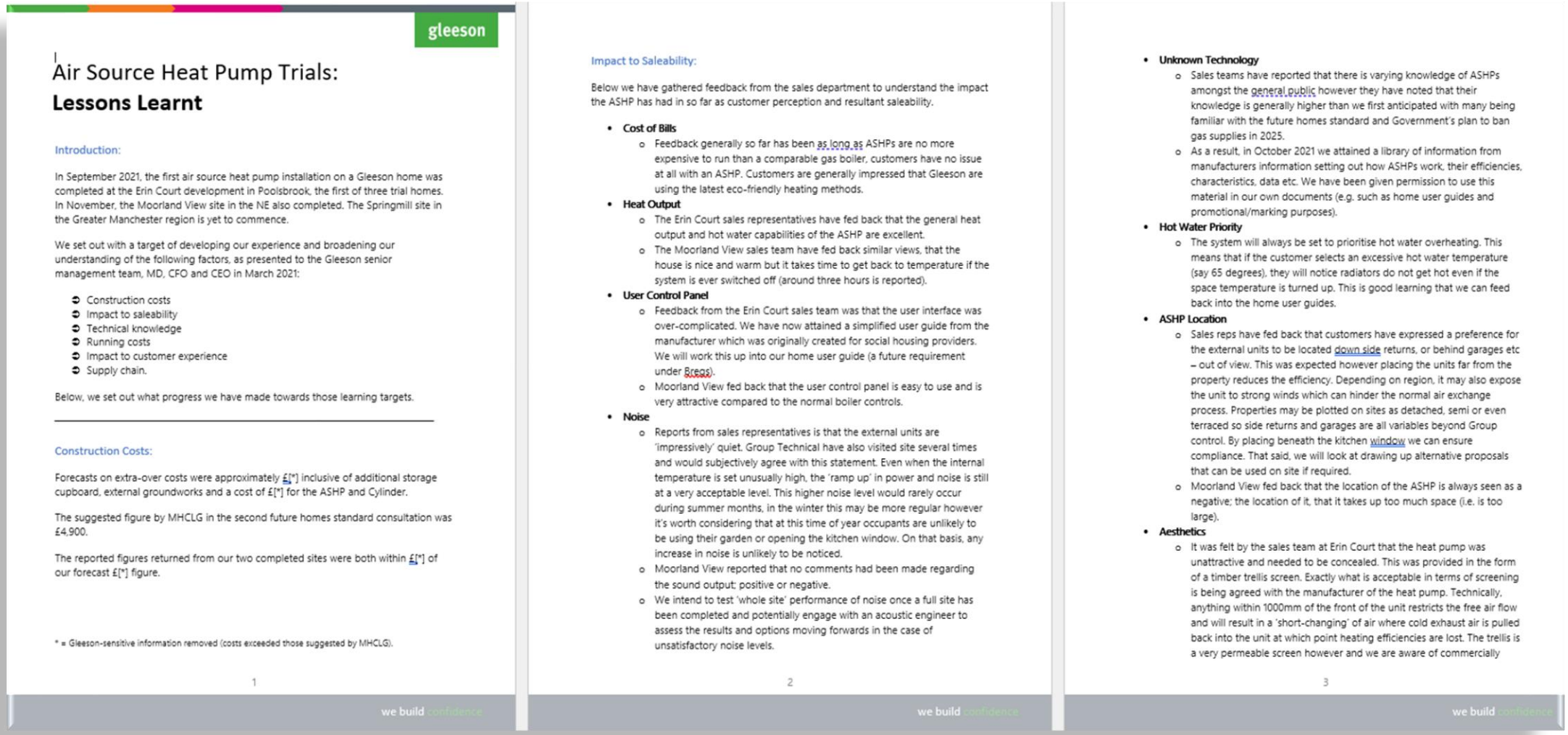
Heat Pump Consumer Issues Register

Plot Number	Housetype	Date	Reported issue	Resolved details	Plumber issue	Electrical issue	Daiken issue	Date resolved
Plot 5	Hawkstone	24.03.2023	Leak from Cylinder	Plumber fixed leak	Yes	No	No	24.03.2024
Plot 27	Stowford	29.08.2023	Gurgling noise and dripping noise in pump		Yes	No	No	31.08.2023
Plot 42	1177	26.09.2023	Unable to turn Heating and Hot water on or off		Yes	No	No	20.10.2023
Plot 24	Penrose	16.10.2023	Rads at the back of the house not working	Plumber bled and balanced system	Yes	No	No	17.10.2023
Plot 25	Stowford	16.10.2023	4 Rads ground floor no heat	Plumber bled and balanced system	Yes	No	No	16.10.2023
Plot 31	A22	16.10.2023	No heating		Yes	No	No	16.10.2023
Plot 36	Hawkstone	17.10.2023	No heating down stairs	Plumber bled and balanced system	yes	No	No	18.10.2023
Plot 52	A11	06.11.2023	AH - 001 errors Disinfectant cycle	User error	Yes	No	No	31.11.2023
Plot 13	A22	08.11.2023	Heating not working screen malfunction		Yes	No	No	08.11.2023
Plot 24	Penrose	14.11.2023	Hallway rad not working	Plumber bled and balanced system	Yes	No	No	08.12.2023
Plot 27	Stowford	27.11.2023	Rads cold downstairs	Plumber bled and balanced system	Yes	No	No	11.12.2023
Plot 60	Hawkstone	30.11.2023	Heating will not turn off		Yes	No	No	30.11.2023
Plot 35	A32	04.12.2023	No heating or Hot water		Yes	No	No	04.12.2023
Plot 27	Stowford	04.12.2023	No Heating		Yes	No	No	04.12.2023
Plot 25	Stowford	04.12.2023	7H-05 Flow error code		Yes	No	No	04.12.2023
Plot 28	Stowford	15.01.2024	Radiators not hot enough, thermostat not reaching temperature.		Yes	No	No	

Bishops Cleeve | Ombersley | Kislingbury | Jephson House | Cank Farm | Hawkesbury Upton

Courtesy of Spitfire Homes

Site Trials – Lessons Learnt Papers



gleeson

Air Source Heat Pump Trials:
Lessons Learnt

Introduction:

In September 2021, the first air source heat pump installation on a Gleeson home was completed at the Erin Court development in Poolsbrook, the first of three trial homes. In November, the Moorland View site in the NE also completed. The Springmill site in the Greater Manchester region is yet to commence.

We set out with a target of developing our experience and broadening our understanding of the following factors, as presented to the Gleeson senior management team, MD, CFO and CEO in March 2021:

- Construction costs
- Impact to saleability
- Technical knowledge
- Running costs
- Impact to customer experience
- Supply chain.

Below, we set out what progress we have made towards those learning targets.

Construction Costs:

Forecasts on extra-over costs were approximately £[*] inclusive of additional storage cupboard, external groundworks and a cost of £[*] for the ASHP and Cylinder.

The suggested figure by MHCLG in the second future homes standard consultation was £4,900.

The reported figures returned from our two completed sites were both within £[*] of our forecast £[*] figure.

* = Gleeson-sensitive information removed (costs exceeded those suggested by MHCLG).

1

we build confidence

Impact to Saleability:

Below we have gathered feedback from the sales department to understand the impact the ASHP has had in so far as customer perception and resultant saleability.

- **Cost of Bills**
  - Feedback generally so far has been as long as ASHPs are no more expensive to run than a comparable gas boiler, customers have no issue at all with an ASHP. Customers are generally impressed that Gleeson are using the latest eco-friendly heating methods.
- **Heat Output**
  - The Erin Court sales representatives have fed back that the general heat output and hot water capabilities of the ASHP are excellent.
  - The Moorland View sales team have fed back similar views, that the house is nice and warm but it takes time to get back to temperature if the system is ever switched off (around three hours is reported).
- **User Control Panel**
  - Feedback from the Erin Court sales team was that the user interface was over-complicated. We have now attained a simplified user guide from the manufacturer which was originally created for social housing providers. We will work this up into our home user guide (a future requirement under Bregs).
  - Moorland View fed back that the user control panel is easy to use and is very attractive compared to the normal boiler controls.
- **Noise**
  - Reports from sales representatives is that the external units are 'impressively' quiet. Group Technical have also visited site several times and would subjectively agree with this statement. Even when the internal temperature is set unusually high, the 'ramp up' in power and noise is still at a very acceptable level. This higher noise level would rarely occur during summer months, in the winter this may be more regular however it's worth considering that at this time of year occupants are unlikely to be using their garden or opening the kitchen window. On that basis, any increase in noise is unlikely to be noticed.
  - Moorland View reported that no comments had been made regarding the sound output; positive or negative.
  - We intend to test 'whole site' performance of noise once a full site has been completed and potentially engage with an acoustic engineer to assess the results and options moving forwards in the case of unsatisfactory noise levels.

2

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- **Unknown Technology**
  - Sales teams have reported that there is varying knowledge of ASHPs amongst the general public however they have noted that their knowledge is generally higher than we first anticipated with many being familiar with the future homes standard and Government's plan to ban gas supplies in 2025.
  - As a result, in October 2021 we attained a library of information from manufacturers information setting out how ASHPs work, their efficiencies, characteristics, data etc. We have been given permission to use this material in our own documents (e.g. such as home user guides and promotional/marking purposes).
- **Hot Water Priority**
  - The system will always be set to prioritise hot water overheating. This means that if the customer selects an excessive hot water temperature (say 65 degrees), they will notice radiators do not get hot even if the space temperature is turned up. This is good learning that we can feed back into the home user guides.
- **ASHP Location**
  - Sales reps have fed back that customers have expressed a preference for the external units to be located down side returns, or behind garages etc – out of view. This was expected however placing the units far from the property reduces the efficiency. Depending on region, it may also expose the unit to strong winds which can hinder the normal air exchange process. Properties may be plotted on sites as detached, semi or even terraced so side returns and garages are all variables beyond Group control. By placing beneath the kitchen window we can ensure compliance. That said, we will look at drawing up alternative proposals that can be used on site if required.
  - Moorland View fed back that the location of the ASHP is always seen as a negative; the location of it, that it takes up too much space (i.e. is too large).
- **Aesthetics**
  - It was felt by the sales team at Erin Court that the heat pump was unattractive and needed to be concealed. This was provided in the form of a timber trellis screen. Exactly what is acceptable in terms of screening is being agreed with the manufacturer of the heat pump. Technically, anything within 1000mm of the front of the unit restricts the free air flow and will result in a 'short-changing' of air where cold exhaust air is pulled back into the unit at which point heating efficiencies are lost. The trellis is a very permeable screen however and we are aware of commercially

3

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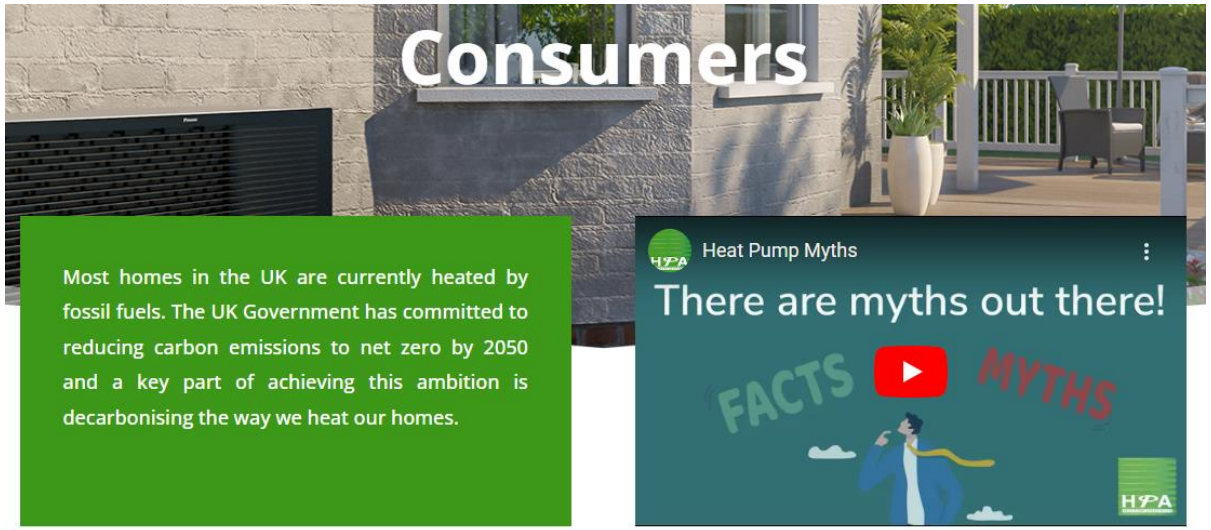
Courtesy of Gleeson Homes

Buyers & Sellers Guidance

Courtesy of Future Homes Hub https://www.futurehomes.org.uk/householder-guidance-buying-a-new-low-energy-home--heat-pump-edition

Air Source Heat Pump Guidance



UNLOCK THE POWER OF HEAT PUMPS:

Your guide to heating your home with a Heat Pump.

See below our collection of articles, dedicated to helping consumers understand and harness the benefits of heat pump technology. Whether you're considering installing a heat pump or looking to maximise the efficiency of your current heat pump system, our articles cover everything you need to know.

Courtesy of Heat Pump Association https://www.heatpumps.org.uk/consumers/

Thinking of installing a heat pump?
Explore key considerations for installing a heat pump, including how long the installation process may take, types of heat pumps and the financial support available.

Read The Article In Full

What to expect when living with a heat pump.
Learn about the day-to-day experience of living with a heat pump and discover tips for optimising energy efficiency.

Read The Article In Full

How to get your home ready for a heat pump.
Prepare your home for a heat pump installation with practical advice and insights into optimising your heating system.

Read The Article In Full

7 Facts About the Benefits of Heat Pumps.
Uncover interesting facts about the environmental and economic benefits of heat pumps, from reducing carbon emissions to possibly using less energy.

Read The Article In Full

Life with a heat pump – owner stories
Follow three consumer journeys with a heat pump system, exploring the comfort and convenience it brings to everyday life.

Read The Article In Full

Air Source Heat Pump Guidance

energy saving trust

On this page

What is an air source heat pump?

An air source heat pump (sometimes referred to as an air-to-water heat pump) transfers heat from the outside air to water. This in turn heats rooms in your home via radiators or underfloor heating. It can also heat water stored in a hot water cylinder for your hot taps, showers, and baths.

How does an air source heat pump work?

Heat from the air is absorbed into a fluid. This fluid then passes through a heat exchanger into the heat pump, which raises the temperature and then transfers that heat to water.

See our in-depth guide to heat pumps for more information on how a heat pump works.

Courtesy of Energy Savings Trust https://energysavingtrust.org.uk/advice/air-source-heat-pumps/

General Heat Pump Guidance

Heat pumps

Opportunities for lower carbon heating

Courtesy of Carbon Trust https://ctprodstorageaccountp.blob.core.windows.net/prod-drupal-files/documents/resource/public/Heat-pumps-guide.pdf

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Appendix 3

Research Interview Brief and Interview Schedule

Background

As part of the Future Homes Standard (FHS) Implementation Plan, the Consumer Implementation Group (IG), seeks to develop a learning tool that maps the consumer journey, highlighting key stages of interaction, learning outcomes and dos and don'ts. The tool will be made available to members and open source to non-members.

Purpose

The purpose is to share learnings from a wide range of housebuilders/developers, who have, or are in the process of delivering low energy, all electric homes that meet or exceed the proposed FHS. A focus of the activity will be on the transition to heat pumps and electric heating, hot water, and cooking.

The tool will be simple, visual, and easy to understand in lay person's language, to inform developers and consumers on key consumer journey touch points, what works well, what does not and what is considered good practice from the projects underway or delivered.

Approach

The tool will be developed using two comparable data sets, gathering, and analysing learning information and blending them into one output.

1. Homes for 2050 Report – A consolidated extract of the findings from the 2050 Homes of the Future Report will be commissioned by FHH, to draw out key learnings and map these against the consumer journey. This will be done by Tom Dollard, of Pollard Thomas Edwards Architects (subject to final scoping and funding agreement with FHH).
2. FHH Case Studies Database – One to one interview with a wide range of selected housebuilders/developers, drawn from the pool of FHH case study projects available on the website. This will be done by Stewart Dalgarno, lead for the FHH Consumer IG, supported by Peter Jurkovic (FHH Researcher).

Interviews - Interviews will solicit key learnings from a base of structured questions. The questions are noted in Appendix A. Interviews will be either on MS Teams or over the phone (subject to preference) and last approx. 45 minutes. Consent forms and briefing notes will be issued in advance. Notes will be taken and interviews over MS Teams will be recorded (subject to agreement with interviewee).

Various developers/sectors will be targeted, with a minimum of 3 interviews each, based on UK Government developer definitions:

1. Large Developer (over 2000 homes)
2. Medium Developer (100 – 2000 homes)
3. Small Developer (10 – 100 Homes)
4. Micro Developer (less than 10 homes)
5. 50% Private for sale
6. 50% Affordable for rent (including PRS)

Total = Minimum 12 Interviews. All interviews are to be complete by end Sept 2024.

Interviewees - The targeted list of interviewees has been drawn from the FHH case study database and contact list available. It is recognised that identifying the right person to interview is key and that this is likely to be critical. As the focus is on mapping the consumer journey, it is likely this will involve a range of roles, including construction, sales & customer care practitioners.

List of Proposed Interview Questions - From the perspective of the developer, please answer these questions, against the backdrop of a consumer, either purchasing or renting a new FHS compliant home.

From your own learning, the FHH are interested in better understanding the consumer journey, key touch points, information provided, dos and don'ts and what works well and what doesn't. Of particular interest is the consumer transition to heat pumps, new technologies and features associated with FHS.

The term "consumer" is used as a generic reference to a customer, who is either buying or renting a new FHS compliant home from a private developer or a housing association. The information you provide will be treated in the strictest confidence, in accordance with the FHH Privacy Policy (https://www.futurehomes.org.uk/privacy).

Consent - Are you happy to consent to provide information (which may include personal identifiable information) accordingly …. **Yes/No**

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Q1 – Tell me more about your project and the consumers involved, for general background information.

Scene Setting – Allows interviewee to talk about their project, putting them at ease, and providing valuable background context to inform question responses.

Q2 - Please provide an overview of the consumer journey, as you see it, from start to finish.

Start being – At the point in which the consumer first engages and seeks input in either buying or renting a new home.

End being – The stage beyond handover, likely to be end of defects liability/customer care period if sold, or in perpetuity if rented.

Q3 - When dealing with consumers, are there any specific consumer groups that need more support or need to be made aware of?

Just Transition – This is geared to ascertaining consumer groups that are potentially more vulnerable or require greater depth of hand-holding, information and support over the lifespan of the consumer journey.

Q4 - When looking at the consumer journey, what are the key touch points or stages that make a difference?

Engagement – This is geared to flush out the consumer engagement stages and what type of strategies are being successfully (or unsuccessfully) used to inform consumers. It would be useful to gauge how much is successfully registering with consumers, before/after handover of their home.

Q5 – From your learning, in terms of the consumer journey, what are the Top 5 Do's? .... i.e. consumer related things that you MUST get right, to maximise a positive consumer experience.

Must Get Right – A question to drive out the important and successful strategies that lead to a positive consumer experience. It would be useful to understand how this is measured and/or evidenced.

Q6 – Conversely, what are the Top 5 Don'ts? ..... i.e. consumer related things that do not work and merely lead to a negative consumer experience.

Things to Avoid – A converse question to Q5, to avoid negative consumer experiences from arising.

Q7 – Can you provide specific examples of information, processes, or tools used to show case best practice?

Post Interview – Please email examples of the consumer information, process of tools provided. This will help the FHH, promote wider market and industry awareness to implement best practice.

Q8 – Specifically, what are your key learning outcomes when providing a home for sale or rent, using heat pumps for electric heating?

Heat Pumps (ASHP) – Heat pumps will become the technology of choice as gas boilers are phased out. This question seeks to flush out issues around education, awareness, understanding, use, expectations, home comfort, lifestyle impacts, and importantly what was put in place to assist the transition as well as maintain positive consumer experience.

Q9 - What information and/or feedback do you get, on energy consumption, bills, and maintenance costs?

Building for 2050 Report – Highlighted lower bills as a perceived benefit &/or expected outcome, however reality is that this may not always be the case. This question seeks to flush out how this is promoted, managed, and dealt with from real world examples.

Q10 – And finally, is there anything that you feel we have missed, ...what is your one overarching MUST get right thing that ensures a positive consumer experience?

Summary – Opportunity to include non-scripted inputs, as well as driving a summary conclusion, that focuses the mind on a single output that would lead to a positive consumer experience.

Interviews

Developers were drawn from the FHH Case Study Database of 25x low carbon all electric developments.

10x home builders/contractors were selected to be interviewed, providing a cross section of small to large home builders, operating in private and affordable markets.

This process flagged many areas of commonality and repetition across those interviewed.

Future Homes Hub - Consumer Journey - Reasearch Interview Schedule

Prepared- Stewart Dalgarno, Ver 1:00 17-6-24

Large Developer	Site Location	No Developers	No. Sites	No. Homes	Key Contact
Vistry	Europa Way, Leamington Spa	1	1	54	Hannah Rapson Kelly Hillman Jack Brayshaw
Vistry	North Whitely, Winchester		1	54	
Vistry	Stoneleigh, Kenilworth, Warwickshire		1	310	
Vistry	Torgus Farm, Redruth, Cornwall		1	185	
Bellway	Barton Quarter, Horwich, Lancashire	1	1	4	Jamie Bursnell
Redrow	Great Milton Park, Newport	1	1	1	Daniel Hastings
Barratt	Westover, Nunney, Frome, Somerset	1	1	82	Ben Cheetham
Taylor Wimpey	Westland Heath, Sudbury	1	1	5	Richard Kinloch
Cala	Langley Court, Beckenham	1	1	4	Steve Rule
Persimmom		1	1	0	Peter Clennell Georgina Cox
Medium Developer					
Croudace	Willowbrook Park, Didcot	1	1	10	Hiba Assif
Bloor	Melton Road, Brooksby	1	1	70	Richard Oldroyd
Thakeham	Ockford Ridge, Godalming	1	1	17	Stuart Fullwood
Gleeson	TBC	1	1	0	Dan Ramsden
Strata	Dreams, Hull	1	1	0	Lee Wilson
Hopkins Homes	TBC	1	1		Graeme Smith
Small Developer					
CG Fry (Duchy of Cornwall)	Nansledan, Newquay	1	1	62	Eugene Doherty
Verdego	Priddys Hard, Gosport	1	1	21	David Craddock
Heyfield	Adderbury, Oxfordshire	1	1	0	Ranjit Kang
Deanfield Homes	TBC	1	1		Barry Groves
Jelson Homes	TBC	1	1		Daniel Charnock
Greencore	Hook Norton, Oxfordshire	1	1	0	Ness Scott
Castlethorpe Homes	Kingam, Oxfordshire	1	1	10	Chris Warner
Spitfire	Bishops Cleeve, Cheltenham	1	1	0	Gary Plant
Affordabe/PRS Developer &/or Contractor					
Latimer (Clarion)	Peasecroft Buntingford	1	1	7	Mark Williams
Midland Heart (Project 80)	Handsworth, Birmingham	1	1	12	Mike Leonard
Hill Group	Hollymead Square, Newport, Essex	1	1	0	Iain Liversedge
Wilmott Dixon	TBC	1	1	0	Douglas Drewniak
	Total Sample	**25**	**28**	**908**	
				603	Vistry Homes (67%)

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If you have any queries or would like to give feedback please contact us at:

admin@futurehomes.org.uk

www.futurehomes.org.uk