

### About

### **Overview of HLM Thoughtful Design Toolkit**

# Thoughtful Design Toolkit

The **'Thoughtful Design Toolkit'** contains a suite of digital tools that enable designers and commissioning clients to define, develop and assess their building projects in an evidence-based way.

Our 'Thoughtful Design Toolkit' seeks to address the challenge of ensuring that the vision and ambition of the project is met and delivered from briefing to completion by using data–enabled processes throughout the life of the project

There are three parts to the toolkit:

# 1. HLM\_Insight 2. HLM\_Healthcheck 3. HLM\_Impact

Each of these tools uses data to advance our understanding of what people want and need from the built environment. They enable designers to work in assurance that their proposals will deliver what building users demand, and they help clients make better-informed decisions about targeting their investment in facilities.

Together they form a powerful toolkit that benefits everyone.



#### POE feeds back to next project start up

## Part 1

### Are you a student or member of staff?

### Staff Staff Administration Academic 63% 37%

#### On average how many hours a week do you spend on campus?

53%

The list below provides a sample of the activities you might undertake on a regular basis. Please select the THREE most important to spatial requirements for each activity.



10

20

30



Desk based work independently



Planned / formal meetings with colleagues



time

50

40

60



This tool presents itself as an online survey which engages with building users around themes of wellbeing and activity. Accessible by any user group our clients wish to identify, it explores personal preferences for the quality of the built environment under a number of key physiological and psychological criteria. The question-set has been developed with an environmental psychologist to ensure responses aren't 'led'. The resultant data set is then used to help define the space standards and environmental criteria for the brief. This process enables much wider engagement with building users than traditional methods would normally allow. It is a more democratic and scientific method of capturing the brief.

**HLM\_Insight** 

The 'insights' that can be gained help shape our approach to the design. With data from the Insight survey we are able to define the environmental design criteria that will meet the aspirations of the building users. The results enable us to develop a building brief that genuinely supports people's health and wellbeing.

Typical questions and outputs are illustrated to the right.

30-40 hours 40+ hours



Overview of HLM Thoughtful Design Toolkit

0

station

Proximity to 'other'

useful spaces

#### In a typical week how long do you spend on each of the following?





Group desk based work



Lecture theatres / formal teaching spaces



Working from another location outside home office



Unplanned / informal meetings with colleagues



## Part 2

# **HLM\_Healthcheck**



Armed with a data-driven brief we can develop informed design responses. Using our Healthcheck Tool we can quickly test emerging concept designs against the criteria of the brief to see how well they were performing.

Healthcheck is a web-based tool that draws on a data base of climate weather files, CIBSE guidance, BREEAM criteria, and other building guidance and regulations which form the benchmark against which designs are assessed. Designers input criteria that describe the concept design in terms of site-specific aspects such as orientation, external noise, heights, adjacencies, window areas, and so on. These inputs automatically generate a data model of the building that is tested against the benchmark criteria. The outputs indicate how the concept design is likely to perform against a range of environmental criteria: daylight, noise, heat, and acoustics. A traffic light system indicates which aspects are performing well or not with suggestions for aspects of the design to reconsider to improve performance. We believe that this tool is the first to holistically consider all the key aspects of the built environment in one platform.

The key innovation here is that the tool relies on simple data inputs that are determinable by the designer at a very early stage. The tool requires no complex 3D modelling. In this way the direction for the concept design can be shaped earlier in the design process. This means a reduction in abortive work and gives confidence to the whole project team that the proposals are progressing in the right direction from the outset.

#### **IC7 Bulding: Annual CO2 emission reductions via** passive design measures



area

11.8%

#### **Annual Solar Gains at façades** - Designed building orientation and 90-degree turn

#### **Optimised glazing % and iteration** with glazing % closest to current design - impact on daylight access and thermal comfort



Optimised glazing area Iteration closest to current design North & South 25% + East & West 15% North & West 25% + South 35% + East 15% REORN for Hig THERMAL COMFORT PERFORMANCE THERMAL COMFORT PERFORMANCE of occupied hours (May - Septembe 6 of occupied hours (May - September) where spaces exceed 23°C where spaces exceed 23°C 13.7%

Part 3

# HLM\_Impact



The final part is our web-based Post-Occupancy Evaluation Tool which compliments HLM\_Insight and HLM\_Healthcheck to complete a digital toolkit. This tool assesses whether the resultant building delivers the quality of environment and experience that was envisaged through post-occupancy digital survey of building users. The responses can be compared with the Insight data to see where the building is and is not performing against the brief. We are not aware of any other such method of analysis in existence.

This bespoke POE questionnaire draws on a number of industry standards to create a rounded, easy-to-use feedback platform that considers qualitative and quantative aspects of completed projects.

Another key innovation of this tool is that it enables a Social Return On Investment (SROI) calculation to be undertaken based on the data outputs. By working with social value consultant we are able to develop this aspect of the tool. It estimates the social value generated by the investment in a monetarized way which we believe will become an industry standard for all future public buildings in years to come.

# Outcome scores from St Andrews, Whitehorn & Powell questionaire

#### Social impact scores

0 denotes No Agreement and 1.0 denotes Full Agreement.



#### Social Return on Investment calculation

Based on the social impact scores above, the social value generated as a result of the design of Whitehorn and Powell Halls for the students living there is:



\*Source: Hatch Regeneris calculations. Wellbeing valuation proxies from the UK Social Value Bank were adjusted according to the survey results and applied to the full student population in the two halls. Deadweight and attribution measures were also applied, and the 20 year figure has been discounted using HM Treasury discounting rates.

66

The study rooms are a great incentive, and the rooms are furnished to a high standard. **99** Student resident



#### 66 It is very nice to live in Powell. The spaces are beautiful and relaxed, and it is easy to interact with other students. 99 Student resident

#### Quality of building

0 denotes No Agreement and 1.0 denotes Full Agreement.



Are you happy with the range of spaces provided by the building?



**0.74** I am satisfied with the building.

### Summary

# **Digital Initiative**



HLM Architects' Thoughtful Design Toolkit is a genuinely unique and innovative use of technology. It addresses universal and omnipresent challenges that clients and designers face in the creation of the built environment. It improves stakeholder engagement, making it more democratic and objective than traditional methods do alone. It helps define a brief that can be expressed in an objective output specification, underpinned with emotional intelligence. It tracks these criteria and ambitions across emerging design solutions, acting as 'guiderails' for designers. Finally, it tests whether the brief and design ambitions have been realised in the finished building and acts as a data base for best practice. This in-turn informs the briefing process creating a virtuous circle of information.

We believe that our investment in this toolkit will improve outcomes for our clients and the people who use the places and spaces we help shape. It supports our vision:

'Thoughtful Design to make better places for people.'



### **Thoughtful Design Toolkit**



#### 1. HLM\_Insight

A digital stakeholder engagement tool that identifies people's preferences for the qualities of the built environment and converts these into a brief with specification targets.



#### 2. HLM\_Healthcheck

A web-based design tool that assesses how well concept designs perform against the brief and best practice environmental standards.



#### 3. HLM\_Impact

A post-occupancy evaluation survey tool that assesses how buildings perform in operation and against the brief.



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