

Re-inventing Libraries

Jane Battye – Northamptonshire Library
and Information Services

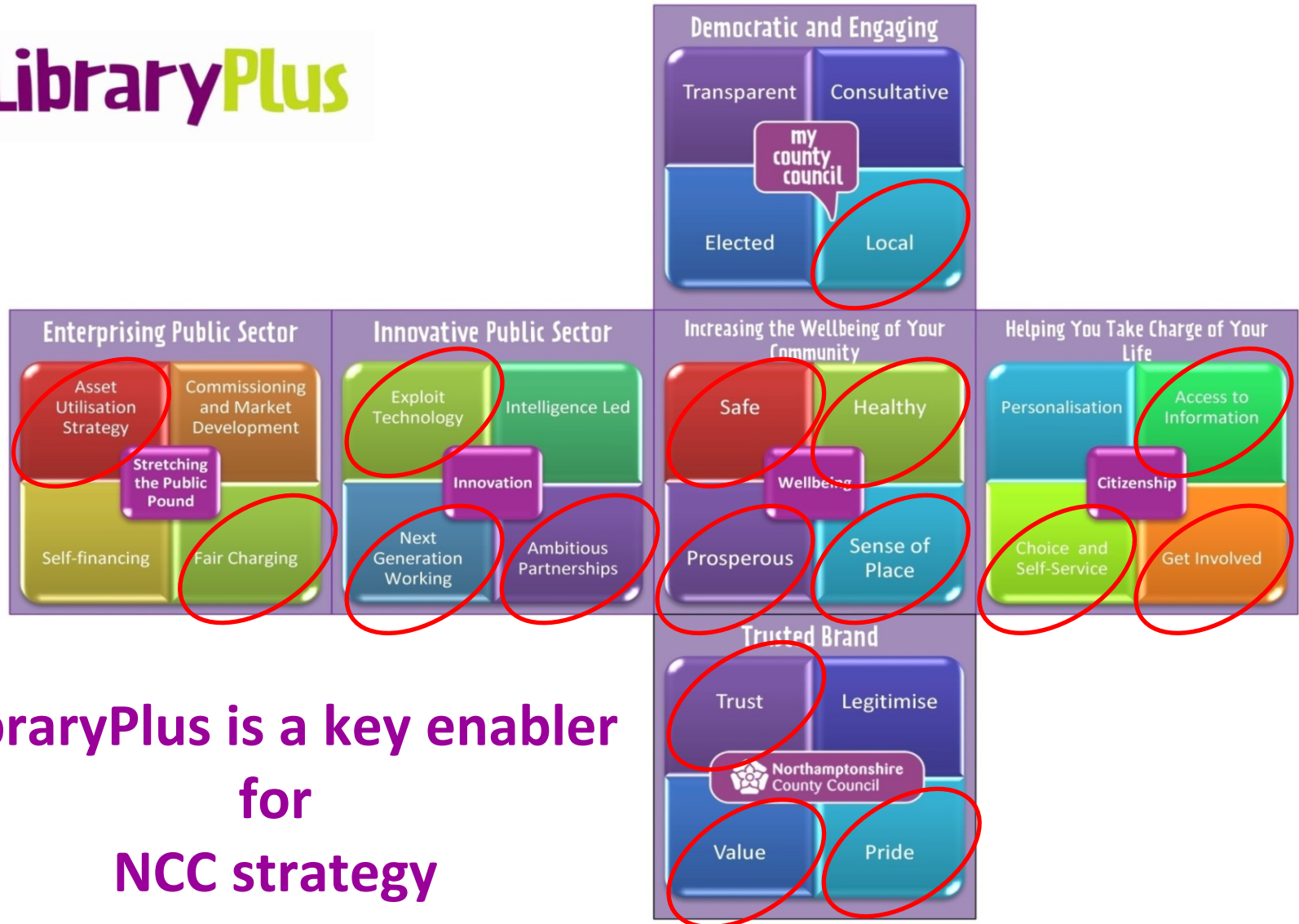
LibraryPlus



Northamptonshire
County Council

Widening the offer

LibraryPlus



**LibraryPlus is a key enabler
for
NCC strategy**

Achieving savings whilst keeping the offer

- Savings 2010-2014 - £1.08 Million
- Savings since - £392k plus in year savings
- Cost per visit 2014 - £2.07
- Cost per visit 2016 - £1.63

So how did we do this?

- Flexible staff and managers
- Self Service – 90%
- From 200 volunteers to 800+
(28,375 hours in 10 months to Jan 2015)
- Reducing management and support costs.

Widening the offer – in practice

- Library service to LibraryPlus
- Money management and Enterprise Hubs
- Offering council and other services – bus passes, blue badges etc
- Libraries are the provider of universal children's centre services.

Re-focusing on the customer

- E-Lending up 34% on 2014-15 (27,311 issues April-Dec 2015)
- Virtual visits up 43%
- Physical visits 1,896,712 – 97% of target.
- Customer satisfaction levels -
(90% net amongst adults + Average 9.2 out of 10 amongst 7-16 year olds)
- Excellent under fives service and response.
- Adjusting opening hours
- Supportive environment for access to digital information.

The critical factors

- High level support – Chief Executive
- Flexible and adaptable staff
- Keen cohort of volunteers
- Ambitious partnerships
- Vision for the service
- Quality standards
- Good use of social media
- IT for service delivery.

Future Steps

- Integrating service provision with health and wellbeing service.
- Moving into a community interest company from 1st April 2016



First for
Wellbeing

SUPPORTING YOU TO TAKE CHARGE OF YOUR LIFE

Libraries supporting wellbeing

- Libraries deliver elements of the PH&W campaigns through our advertising channels (digital signage, social media etc)
- Key objective for FfW is “Supporting you to take charge of your life” – we do this through community hubs, assisted digital support and also through the Business and Intellectual Property Centre
- Potential to work closely with other services for mutual outcomes i.e. Registrations, (warm handover), Adult Learning (Health ESOL courses in libraries working with Children’s centres)

Libraries supporting wellbeing

- Libraries support mass participation activities such as 20 million steps when libraries act as catalysts for activities and promotion
- Through partner working we are able to deliver effective projects like “The Girl I want to be” to tackle young people’ mental health with out stigma
- Users and volunteers both note that their library helps overcome social isolation
- Grant funded to deliver cancer care projects in prisons and with young people

Jane Battye

**Northamptonshire Library and Information
Services**

jbattye@northamptonshire.gov.uk

01604 367952

LibraryPlus



**Northamptonshire
County Council**



**APSE Sports and leisure Management
Advisory Group**

Oxford Town Hall

Wednesday 9th March 2016

LEISURE NEW BUILD The Exeter City Council



Sustainable Energy Efficient Developments

APSE Sport & Leisure Management Advisory Group



AGENDA

1. Introduction
2. Environmental Factors
3. Commercial case
4. Exeseed developments
5. Questions

INTRODUCTION



Who?



What?



Why?



TRACK RECORD

Development Track Record to Date



Rowan
House

2009



Knights
Place



Barberry
Close



Silverberry
Close

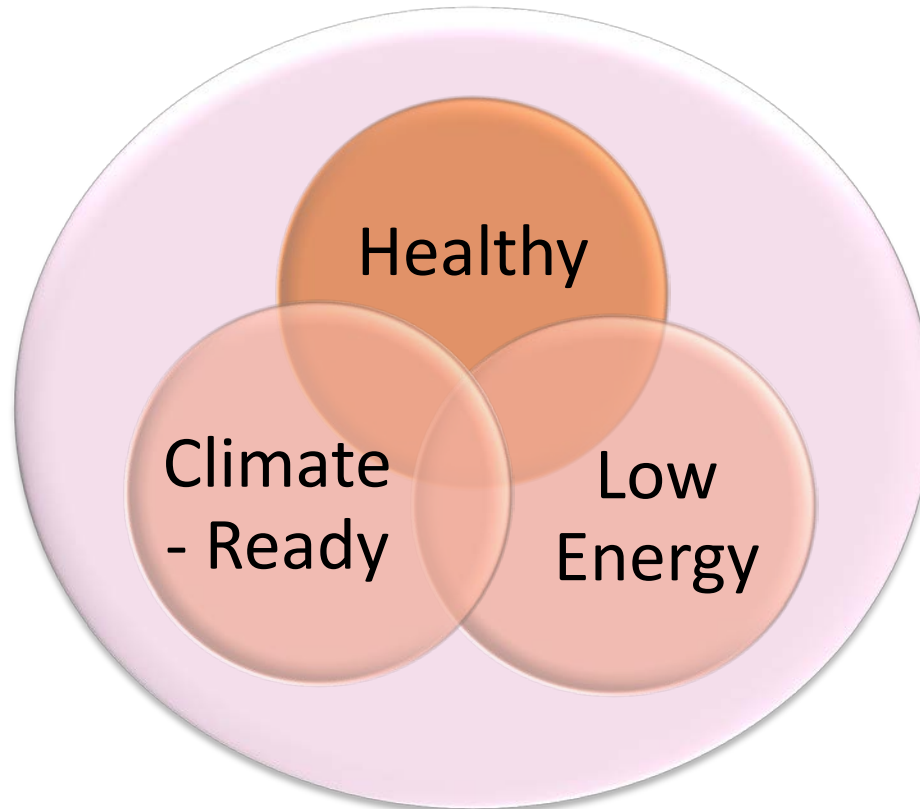


Reed walk

2015



ENVIRONMENTAL FACTORS



Low Energy (Passivhaus)

What is Passivhaus?

- a rigorous **energy** standard
- a rigorous **comfort** standard
- a rigorous **quality** standard

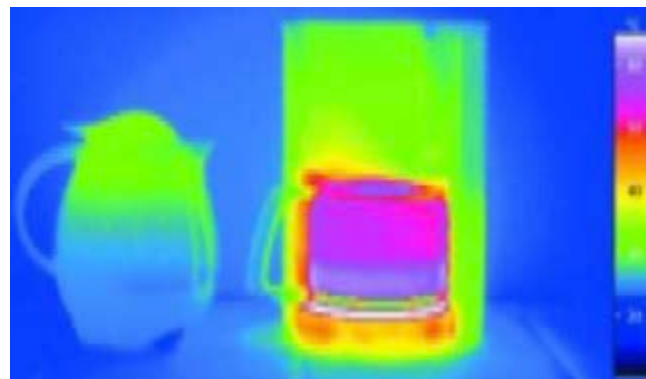
What is Passivhaus?

- limit of 15kWh/sqm/year for heating and cooling
- limit of 120kWh/sqm/year for total primary energy
- limit that occupied hours cannot exceed 25°C for more than 10% of annual occupied hours

What is Passivhaus?

- developed in Germany between 1988 and 1990 by Wolfgang Feist, a building physicist
- in response to concern that buildings were not performing as predicted
- Passivhaus Institute was founded in 1996 to promote and control the standard through certification

What is Passivhaus?



How do you achieve Passivhaus?

- design the orientation and form of the building to optimise solar gain and improve day lighting
- improve the building fabric - eliminate thermal bridging, increase insulation, airtightness and window specification
- use MVHR to ensure sufficient ventilation, whilst avoiding unnecessary heat loss in winter

How do you achieve Passivhaus?

- use PHPP to demonstrate design achieves standard
- monitor construction carefully
- supply PHPP modelling, evidence from air test, and proof of supply of key products to Certifier
- Certifier assesses compliance and issues certificate

Why Passivhaus?

It works!



“I love the fact that the flat is warm all the time and whenever I come in from outside it is always nice and warm unlike any other building I have been in”

“I have never felt uncomfortably hot or cold a single day since moving in”

Why does Passivhaus work?

- it does not rely on complicated technology
- simply ***good design*** and ***good construction***
- underpinned by ***rigorous certification***

Why does Passivhaus work?

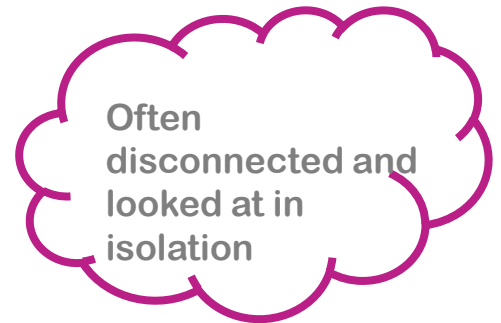
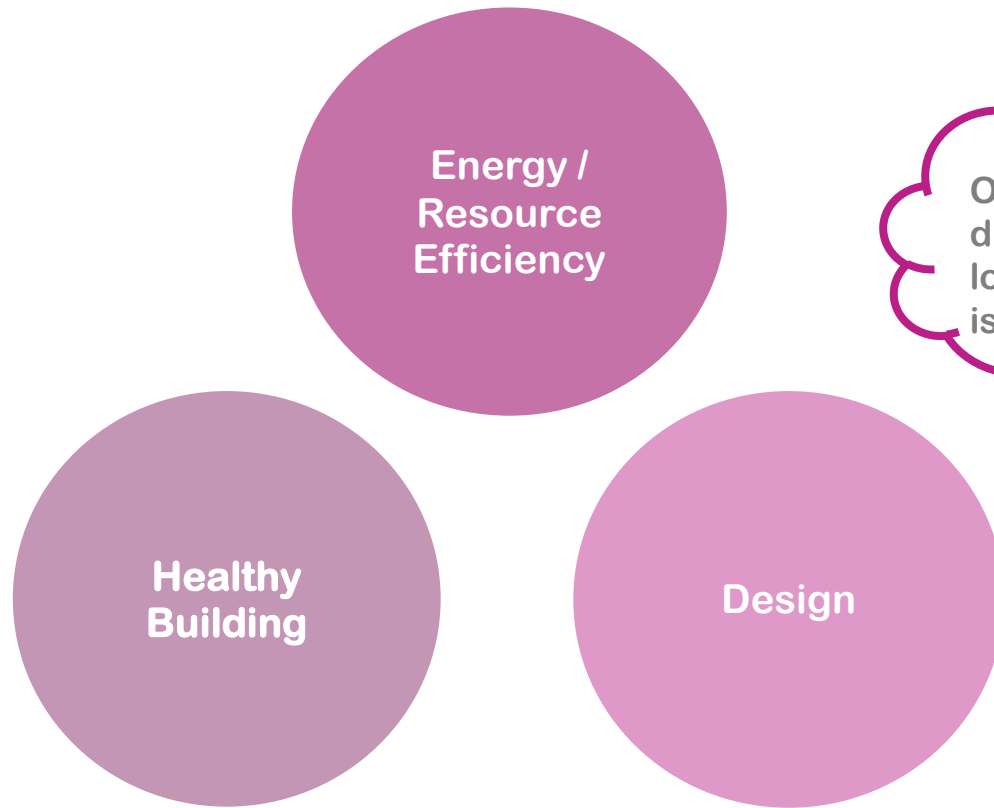
- based on sound building physics and on the evidence of what ***actually works***
- based on ***reducing energy, by design***, instead of offsetting carbon, by add-on
- encourages integrated design, and a rigorous discipline, that delivers ***buildings that work***

Dispelling Passivhaus Myths...

- You can open the window
- It is not just a German standard
- It doesn't dictate construction method
- It is not just a domestic standard
- It doesn't exclude other standards e.g. BREEAM
- It does not need to be more expensive

Building Biology

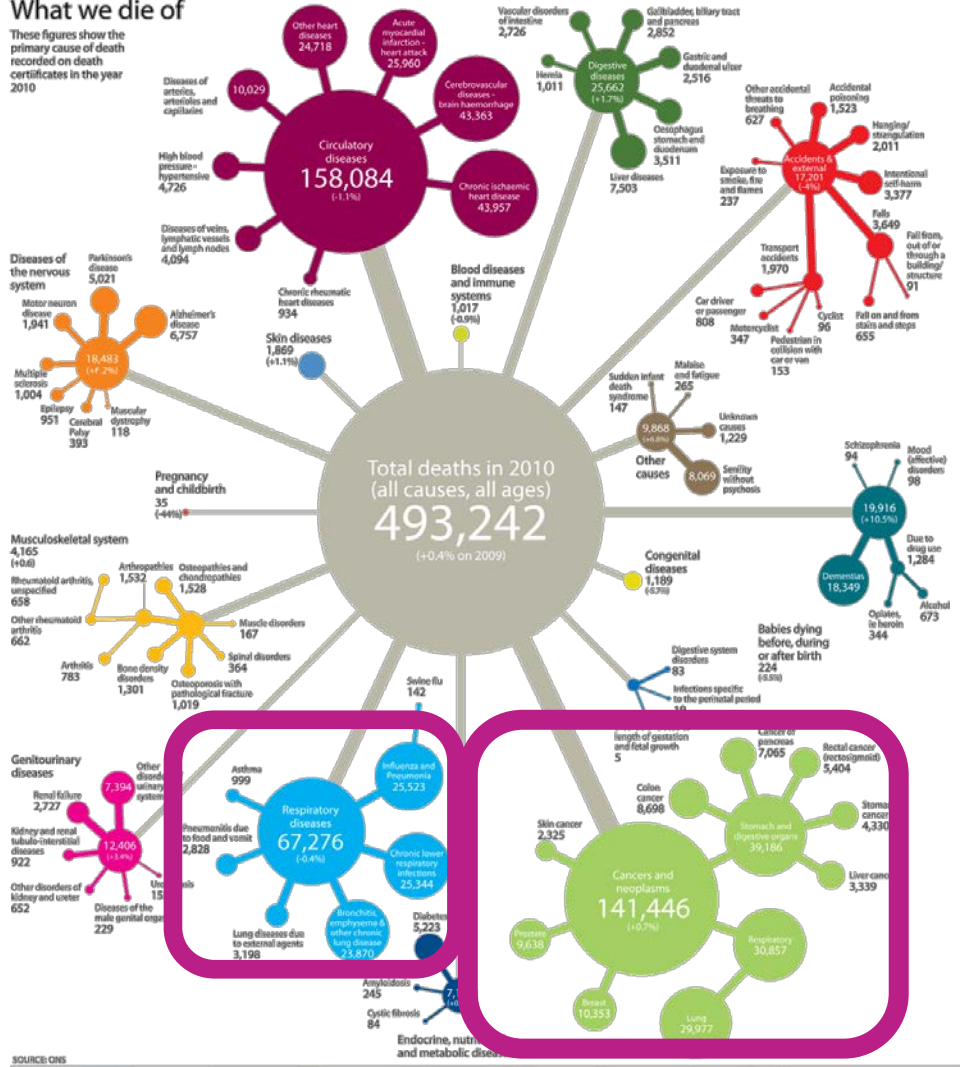
'Holistic study of interrelationships between humans and their environment'



Often disconnected and looked at in isolation

What we die of

These figures show the primary cause of death recorded on death certificates in the year 2010



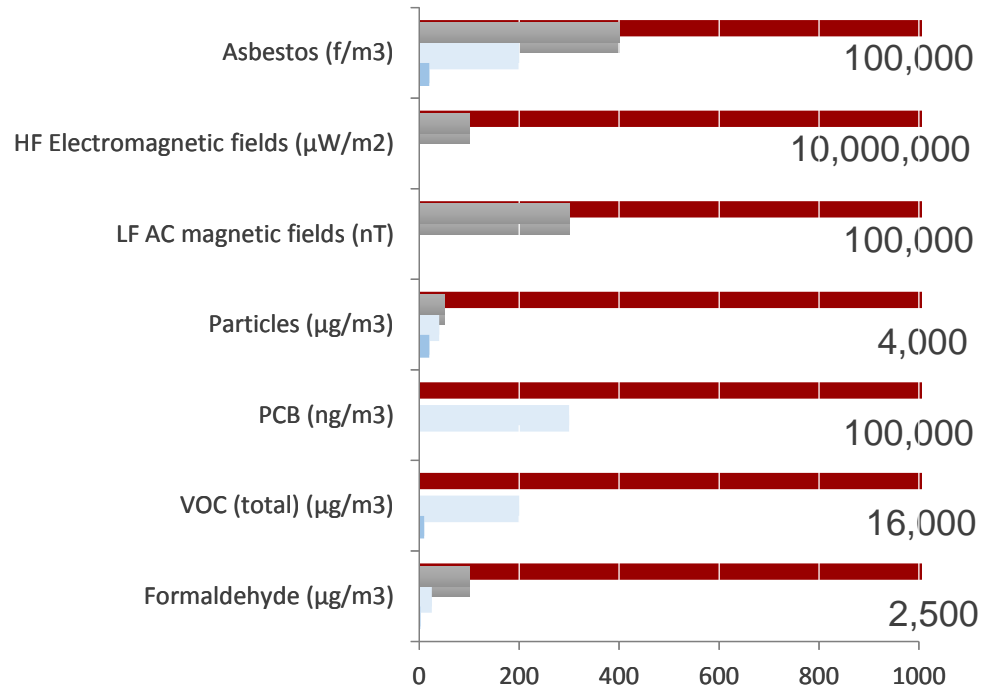
Since the mid 1970s of already better the increases in obesity, diabetes and related conditions combined have increased by 23% rather than 50% so all Europeans will be affected in 10 years' (Cancer Research UK, 2011)



Healthy Design
Does it matter?

Healthy Buildings

Recommended limits for a range of substances classified as either 'carcinogenic (1)' or 'possibly carcinogenic (2a)' by the WHO.



Building Biology

'Holistic study of interrelationships between humans and their environment'

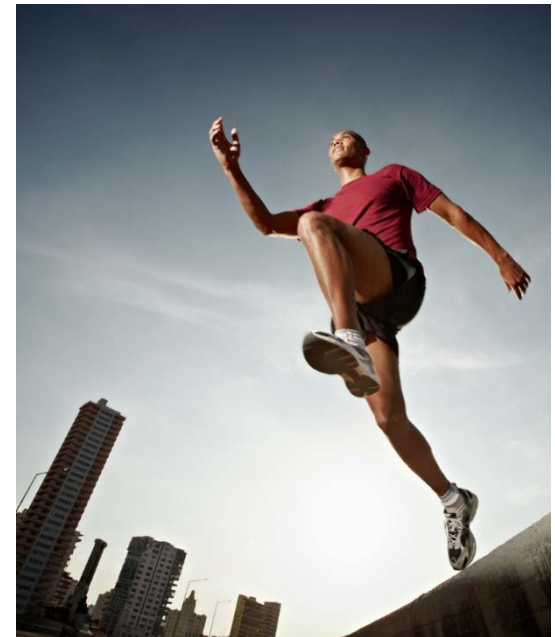


Healthy Design – Why bother?

On average we spend about **90% of our time indoors** and 30% of our time in bedrooms

At these exposure times **even low concentrations** of harmful substances **affect our health** in the long term and can cause chronic diseases. More vulnerable inhabitants like children and elderly persons are particularly exposed to this risk

Bau Biology is about managing this risk and reducing it where possible



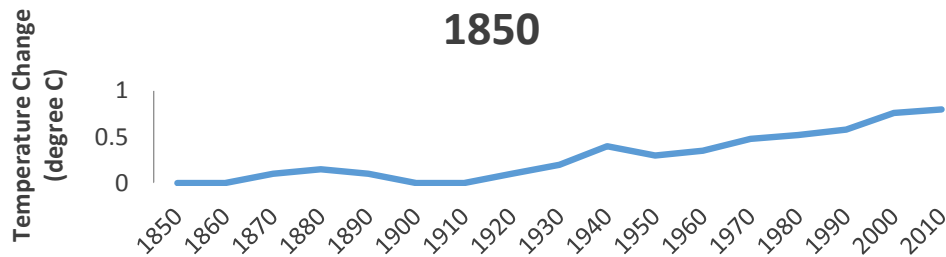
Climate Ready

Climate Change

What is predicted for the UK?

- Since 1960's the average temperature in UK has risen
- Average summer temperature increase of 4-6 degree by 2100
- Increase in UV radiation
- Events of extreme rainfall and flooding have become more frequent and this trend is predicted to increase

**Change in Average Temperature Since
1850**



Climate Ready

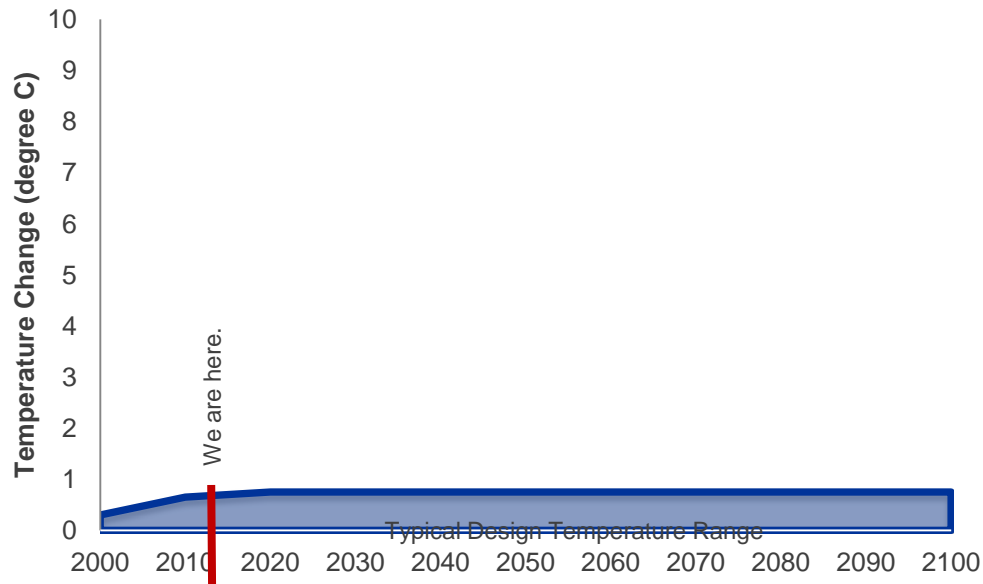
Overheating

What about climate change?

Building designers typically use weather data that is based on past experience to predict the future performance of a building.

The building is then designed to maintain optimum comfort and (*ideally*) to use minimal energy over the lifetime of the building.

Ignoring the evidence that the climate is changing.

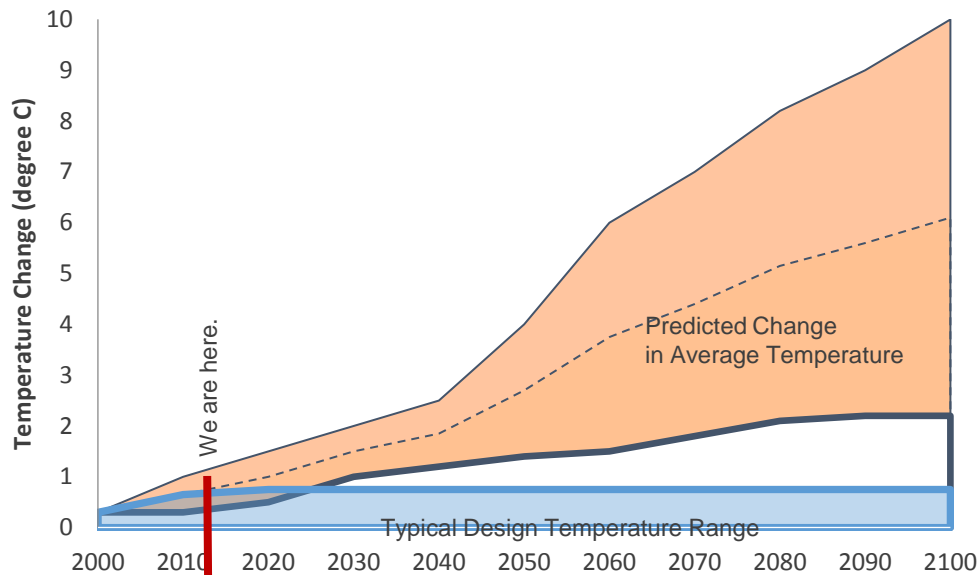


Climate Ready

Overheating

What about climate change?

Building designers typically use weather data that is based on past experience to predict the future performance of a building.



ECC uses probabilistic future weather data from Exeter University's *Prometheus Project* which were derived from the latest climate projections for the UK (UKCP09).

The projections are probabilistic in nature instead of deterministic so as to allow users to assess the level of

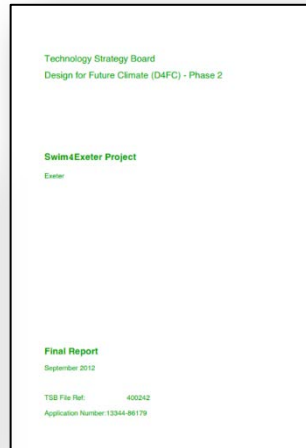


LEISURE CENTRE

Background



**Bus Station
Regeneration**



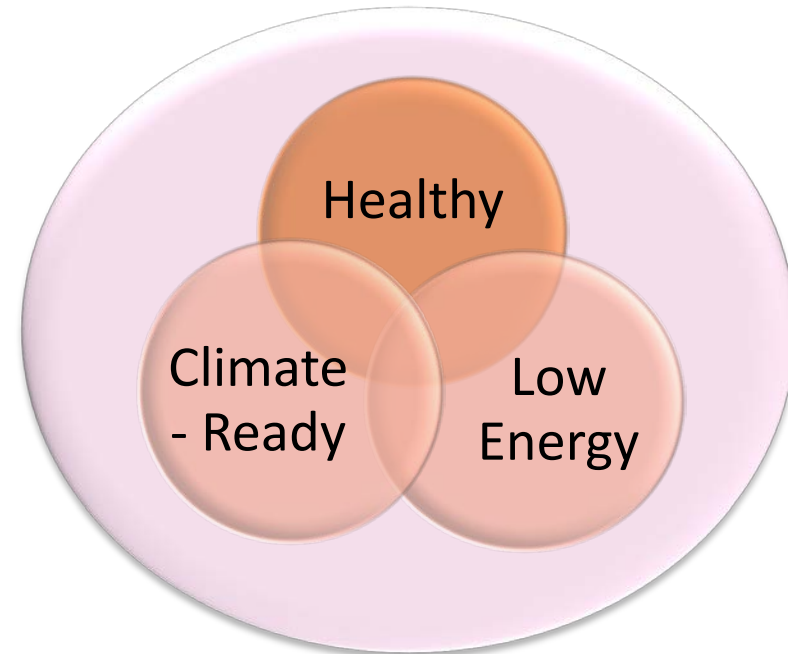
**TSB
Report**



**Replacement
for Pyramids**

Specificatio

Element	Provision
Main Pool 25m, 8 lane pool	2.0m, movable floor across half the area
Teaching Pool 20m, 4 lane pool	0.0 – 1.2m deep, movable floor
Confidence Water	60 sq m
Spectator Seating	100 seats
Gym	150 station, 750 sq m
Exercise Studio	30 + 20 person, separate spinning studio
Health Suite	Spa offering, 350 sq m
Flexible Meeting Room – Crèche, Seminar, etc.	35 sq m
Café	50 seats, with servery and food preparation room (no kitchen)
Soft Play	Double height in part



The Passivhaus Pool Concept

A passivhaus building envelope will significantly reduce heating energy losses in pool building and results in the following benefits:

- Higher surface temperatures
- Minimum thermal bridging avoiding consideration risk
- Increased thermal comfort



Passivhaus Leisure Centre

Other Passivhaus opportunities and benefits:

Higher relative humidity throughout the year ($\approx 64\%$)

- Reduced evaporation rates from pool water and reduced required ventilation rates (1ac/hr with no circulation)

- High quality PH ventilation system and controls with further reduce ventilation heat losses

- Reduced electrical energy demand for ventilation

More economic ventilation / ducting (e.g. glazed facade elements don't need to be ventilated to protect from condensation)



Passivhaus Leisure Centre

Key design elements:

- High performance passivhaus building fabric
- High performance windows & doors
- High levels of airtightness
- Internal zoning
- Compact building form
- Optimum solar orientation (40% south facing glazing for wet areas)



Passivhaus Leisure Centre – Energy Saving

The Great Unknown – Energy Cost

- Future energy costs fluctuating
- Arup Forecast: A reduction of energy cost by 70%



Conventional build predicted energy costs

£57/m²/pa

Passivhaus predicted energy costs £20/m²/pa

Passivhaus Leisure Centre – Energy Saving

PASSIVHAUS FACTS AND FIGURES

The energy savings generated within one year would be sufficient to:

cover the total annual energy consumptions of 350 (4 person) average UK households



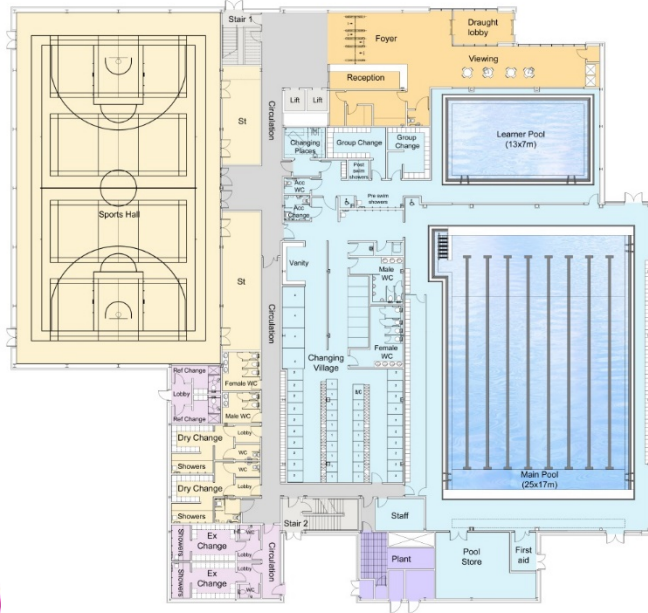
make 140 million cups of tea



The carbon reductions from adopting Passivhaus on the Exeter Active project for a single year (when compared to a standard modern UK leisure facility) are equivalent to:

Passivhaus Effect

Typical Leisure centre



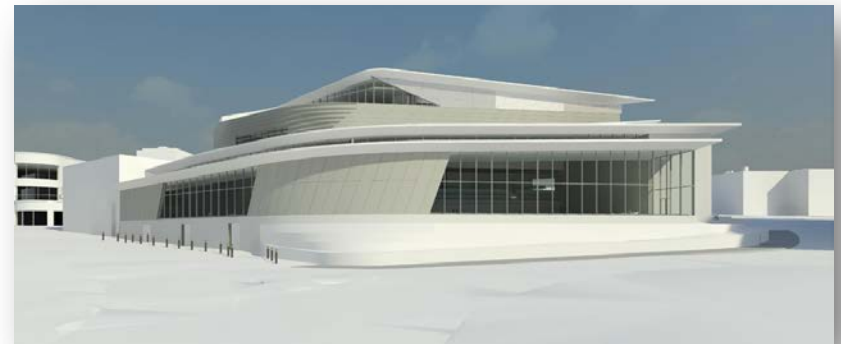
Example Leisure Centre of 4,500m²

- Energy cost
£250k/ annum
- Passivhaus cost
£90k/ annum
- Saving
£160k/ annum

Bau Biology – The 25 Principles

5 categories:

1. Site
2. Environmental Impact
 - Energy
 - Water
3. Materials
4. Design
 - Light
5. Indoor climate
 - Air quality
 - Acoustics



Healthy Leisure Centre

ECC Environmental Factor = SBM 2015

Comfort criteria:

- Offices 23 – 26 deg C
- Swimming pool 30 – 34 deg C
- Dry Sports 14 – 16 deg C
- Changing rooms 24 – 25 deg C

Daylight criteria (daylight factors):

- Offices: Average 5%, minimum 2%
- Swimming pool Average 5%, minimum 2%
- Dry Sports Average 5%, minimum 3.5%
- Changing rooms Average 3%, minimum 1.5%

Water quality

- WHO ('World Health Organisation') drinking water quality
- comply with DIN 19643

Radiation

- offices and creche to SBM 2015 part A category 'no concerns'

Air quality

- offices and crèche to SBM 2015 Part B 'no concerns'



Healthy Leisure Centre

Water quality – UK situation

During a 45 minutes swimming lesson a child swallows about a pint of pool water.

The UK is the only country in Europe that does not comply with the German DIN standards or an equivalent high standard.

UK pools are estimated to have 10 to 20 times higher parasitic infection rates when compared against other EU countries (EuroSurveillance V12, May 2007).

UK treatment standards PWTAG: 1.5mg/l of nitrogen trichloride are acceptable, under German DIN only a maximum of 0.2mg/l are allowed.

And yet the German Environment Agency states that public pools are not safe for children under 2 years.

... where does that leave the UK ?



Healthy Leisure Centre

Common practice – water treatment

Chlorination of pool water

- The chlorine smell of swimming pools is due to a chlorine reaction product called nitrogen trichloride.
- This gas is heavier than air and thus creates a layer of higher concentration immediately above the pool water where it is inhaled by bathers.
- Nitrogen trichloride has been linked to occupational diseases and to causing asthma (2006, pool chlorine hypothesis).
- A study of 624 swimming pool workers found a significant correlation between upper respiratory symptoms and their total exposure to nitrogen trichloride and specific symptoms of asthma.
- In another study two hours exposure to nitrogen trichloride above a swimming pool was found to weaken the protective nature of the surface of the lungs (hyperpermeability) which could allow allergens to cross this barrier.



Children and asthma (UK)

- One in 11 children has asthma.
- The UK has among the highest prevalence rates of asthma symptoms in children worldwide.
- in 2013 on average there were 69 emergency hospital admission per day, or one every 21 minutes.

The costs of asthma

- The NHS spends around £1 billion a year treating and caring for people with asthma.
- In 2008/09 up to 1.1 million working days were lost due to breathing or lung problems.

Healthy Leisure Centre

Common practice - Filtration

- Most common filtration strategy for public pools is sand filtration.
- To assist the filtration 'flocculants' are automatically added to the water prior to it passing through the filters.
- Poly aluminium chloride is most commonly used and it forms a 'floc' that helps trap fine particles, microbes and pollutants in the water.
- But, Aluminium chloride has been established as a neurotoxin.
- Neurotoxins are poisonous and destructive to nerve tissue and long term exposure can cause widespread central nervous system damage such as intellectual disability, persistent memory impairments, epilepsy, and dementia.
- Sand filtration requires relatively high levels of chlorination.



Healthy Leisure Centre

Alternative water treatment / filtration strategies

Ultrafiltration

Ultrafiltration is a membrane filtration system where excess pool water is forced by high pressure through a semipermeable membrane which filters out molecular size particles and bacteria.

- No chemicals required (aside from cleaning)
- Constant product quality regardless of feed quality
- Compact plant size
- Capable of exceeding regulatory standards of water quality, achieving 90-100% pathogen removal



Healthy Leisure Centre

Alternative water treatment / filtration strategies

UV Treatment

Ultraviolet (UV) light induces the formation of covalent linkages on DNA and thereby prevents microbes from reproducing. Without reproduction, the microbes become far less dangerous. Studies have shown that UV doses are effective at killing bacteria like Giardia and crypts and have been successfully used in public pool buildings in combination with other filtering/treatment technologies.



Climate Ready Leisure Centre

- 3rd party verification – The centre for energy and Environment at Exeter University
- Climate change adaptations:
 - Design (orientation, overhangs, zoning)
 - Cooling strategies (spectator seating /gym/ studios)
 - Night cooling
 - Comfort cooling
 - G – value glazing
 - Brise soleil
 - Water attenuation
- Comfort 2018 – 2080 (62 year modelling)

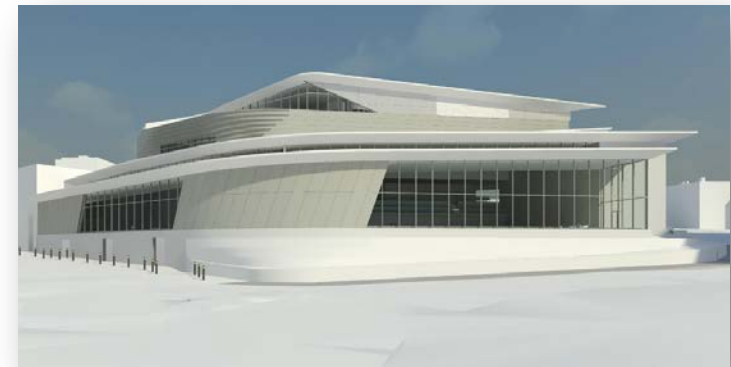


Cost Effective Leisure Centre

• Passivhaus Premium?

Uplift	Source
10 – 23%	Aecom
15%	PH I
0 – 15%	Passivhouse + Magazine

- Base Cost Caution – apple v. apple
- ECC Residential £ 1.145/m² (BCIS 4th Q 2015 £618 - £ 1,330/m²)
- ECC Leisure 10% premium (£1.8m)
 - Passivhaus
 - Climate Ready
 - Building Biology
 - Life Cycle Costs



Cost Effective Leisure Centre

Cost Drivers

Cost Increase	Cost Decrease
Better quality components	Compact forms
Air tightness products	Simpler systems
Ventilation system	Simpler controls
Attention to detail	

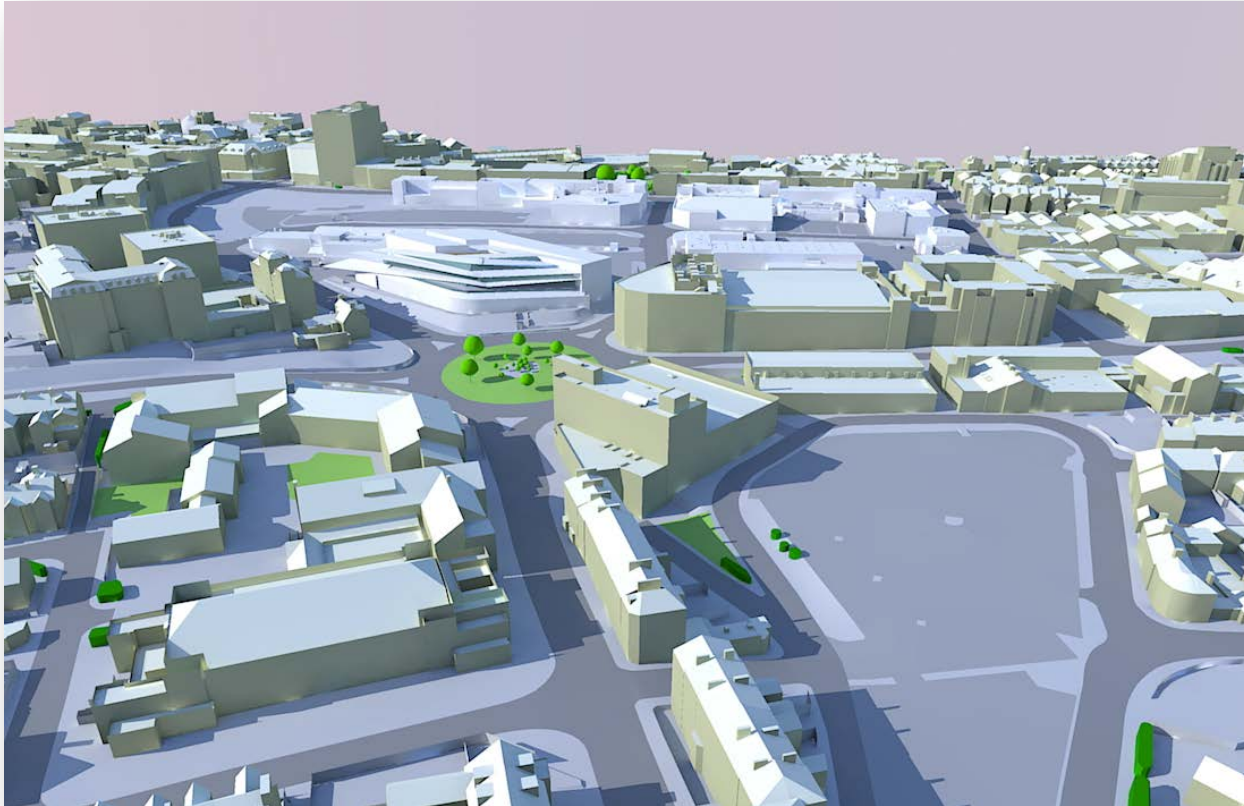
- Early stages of design development is where the cost uplift can be limited with cost effective design decisions such as orientation, compact form etc.

The cost uplift is influenced by key drivers, which must be focused upon and optimised from the outset of design development.

Conclusion

- Passivhaus can be delivered cost effectively and within typical benchmark costs when the following is considered;
 1. Clear understanding of budget constraints and comparable base cost.
 2. Design approach which optimises cost effectiveness from the outset of design stages.
 3. Careful consideration of procurement strategy, contract form and market engagement.

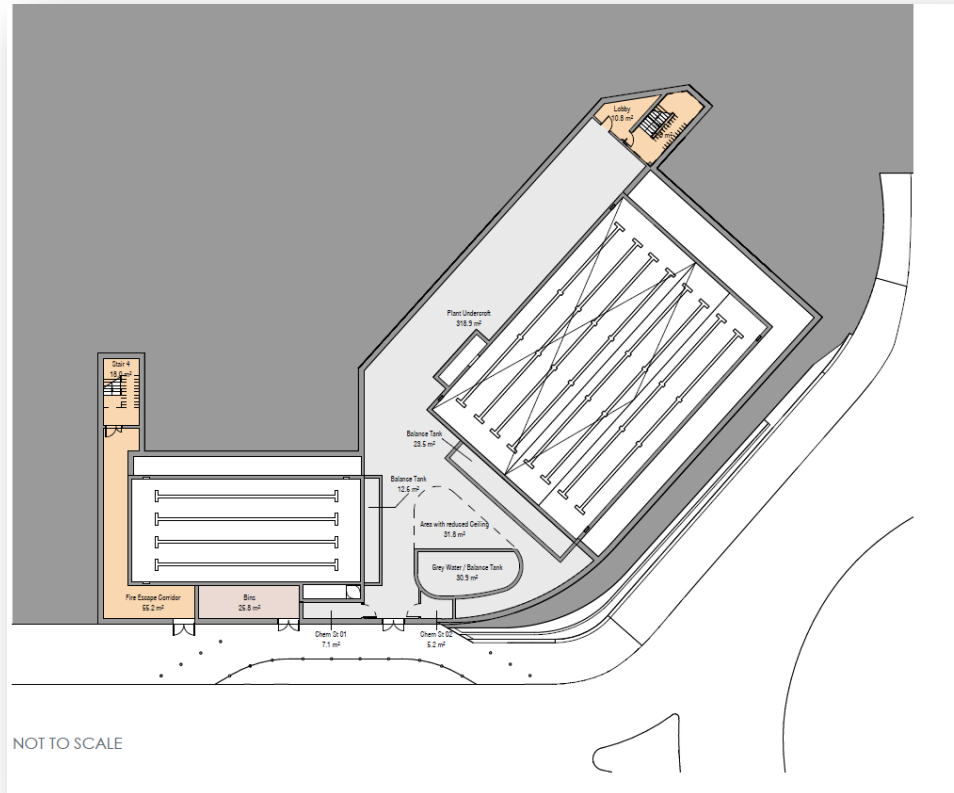
Consider utilising a bespoke Contractors Framework



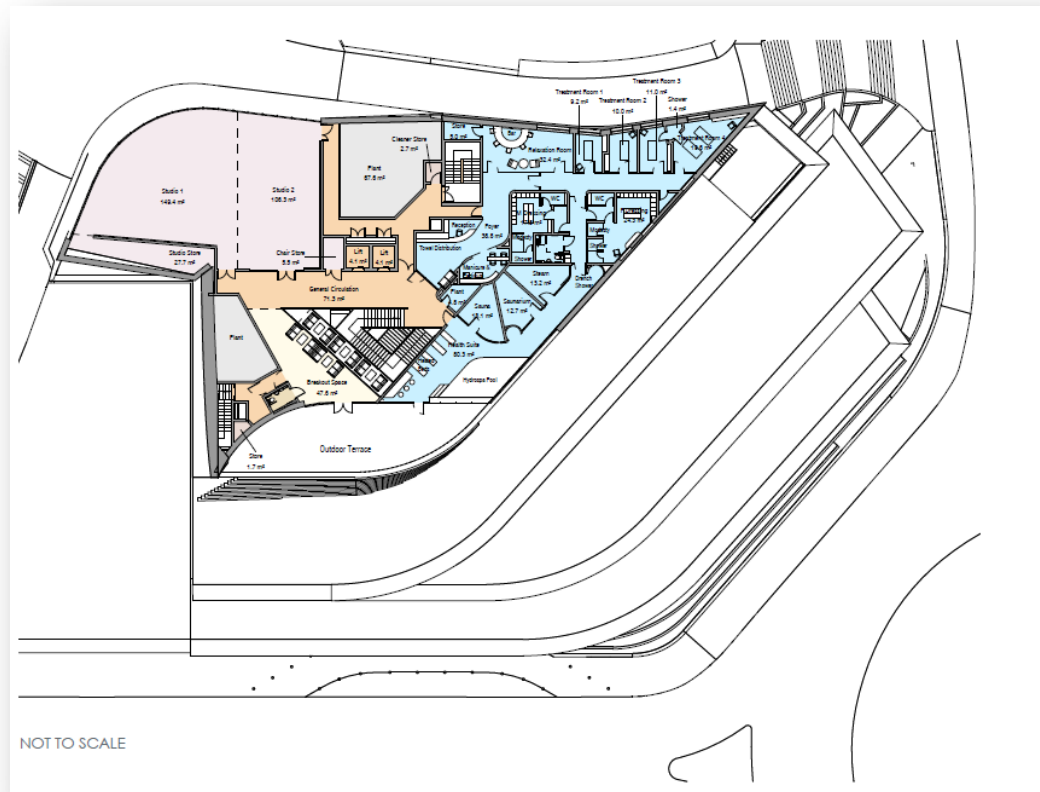
Aerial View

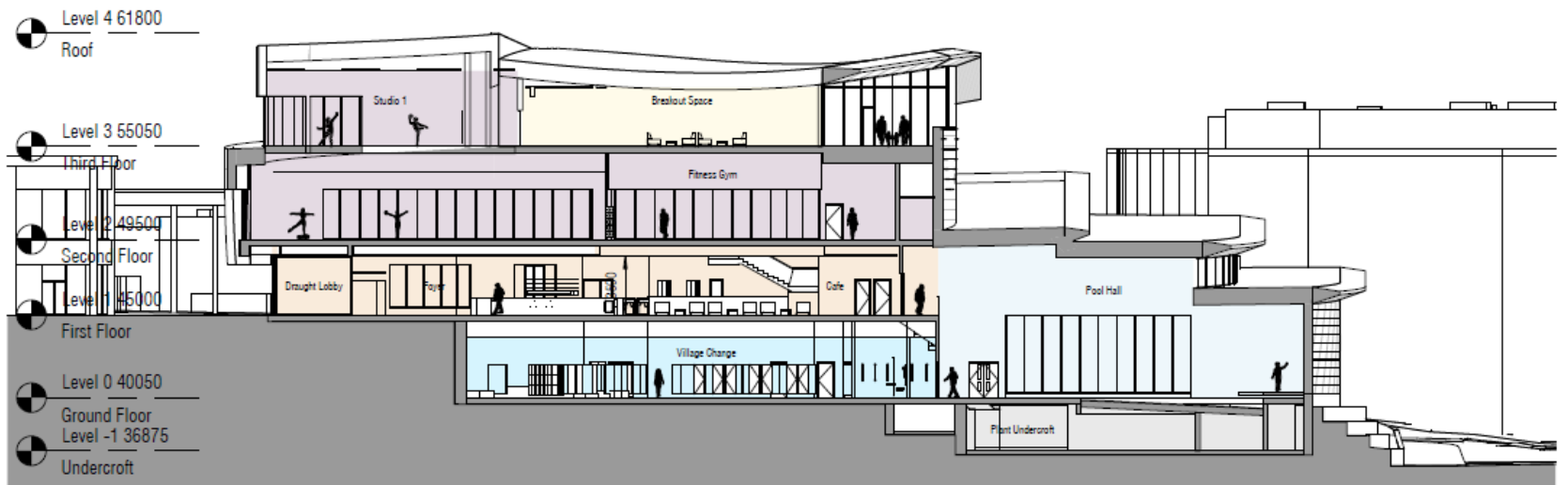


Level 1 - Undercroft



Level 3 – Studios & SPA Level

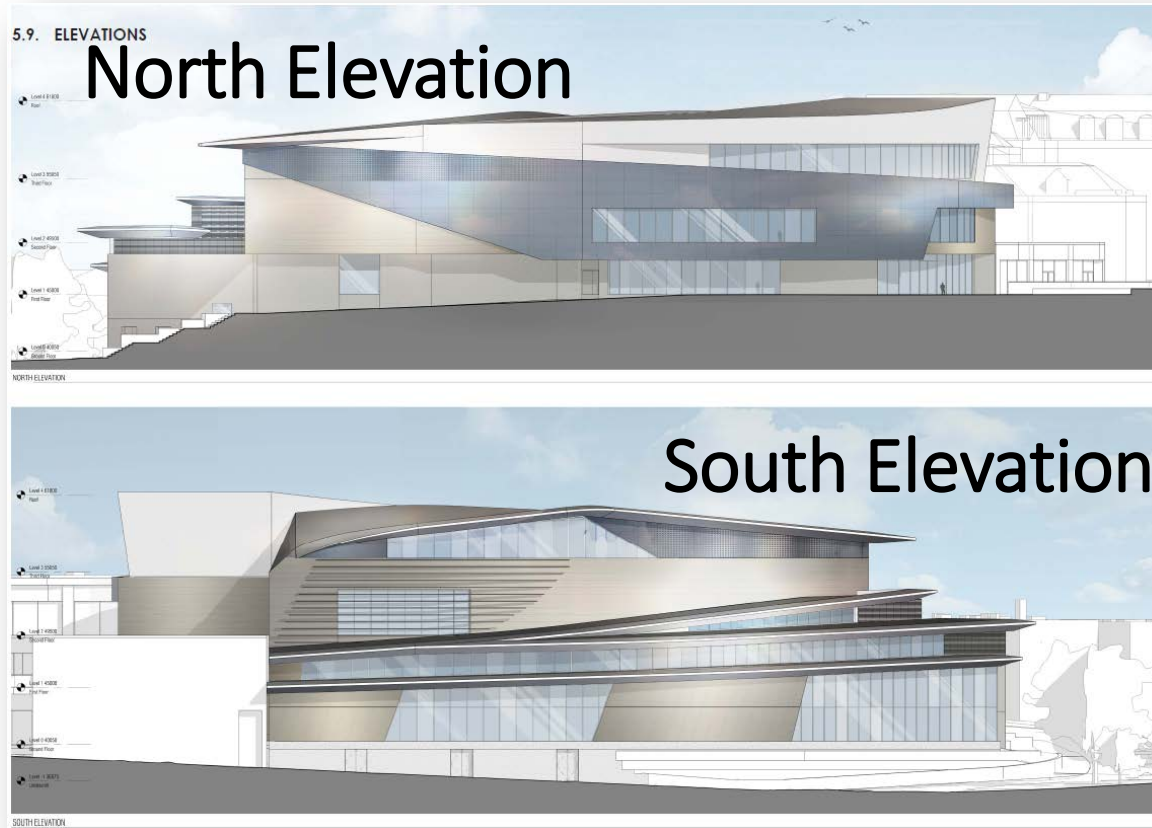




SECTION A-A (NOT TO SCALE)

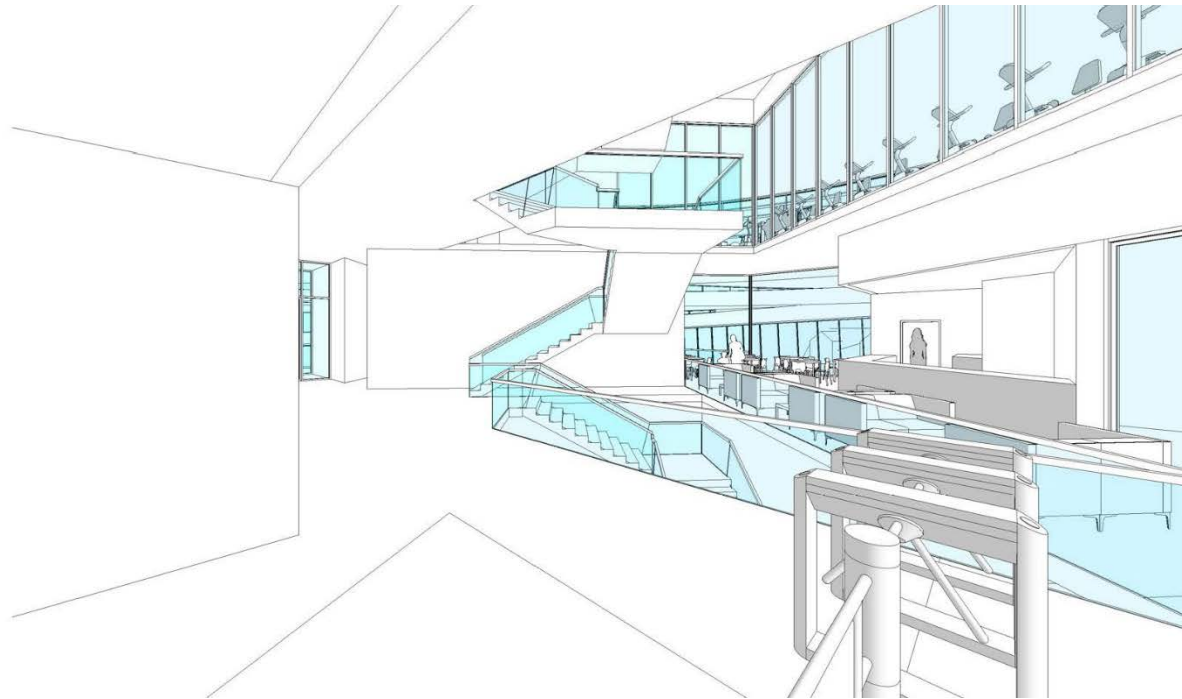


SECTION B-B (NOT TO SCALE)





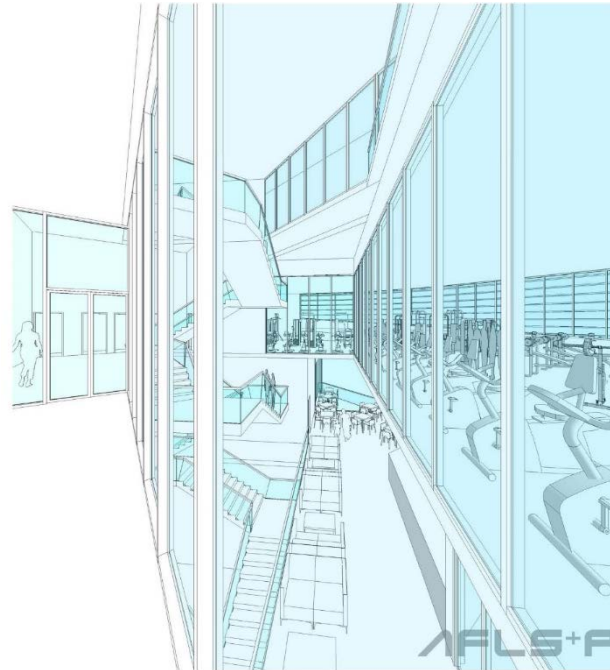
Entrance looking towards the café



Gym looking down to the entrance

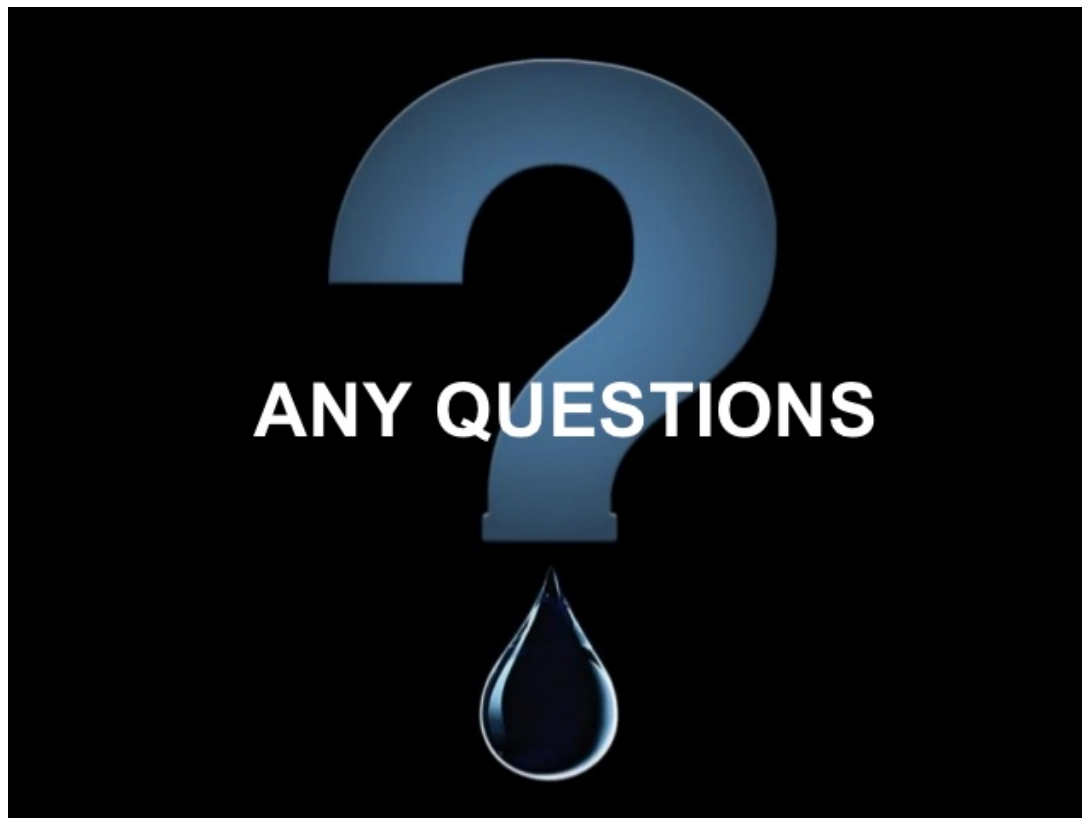


Fitness gym looking down to the cafe



Low Energy Leisure Centre







Emma Osmundsen

Housing Development Manager &
Client Lead (Build)

Emma.Osmundsen@exeter.gov.uk

01392 265869

