

# **Triage: Designing a Materials Management Framework for secondary use of construction components**

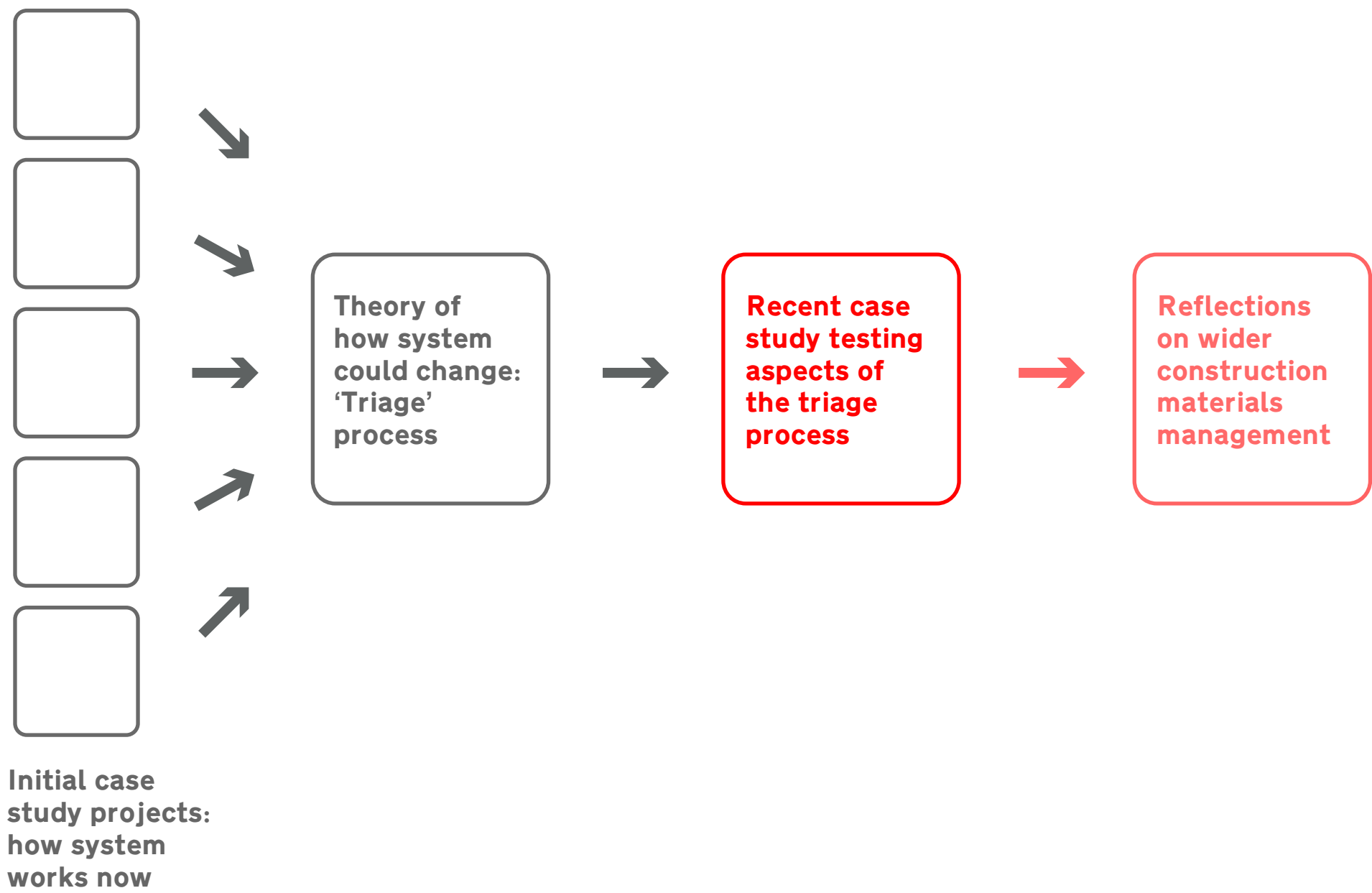
Colin Rose<sup>1</sup> and Julia Stegemann<sup>2</sup>



<sup>1</sup> UCL Centre for Urban Sustainability and Resilience, ARB registered architect

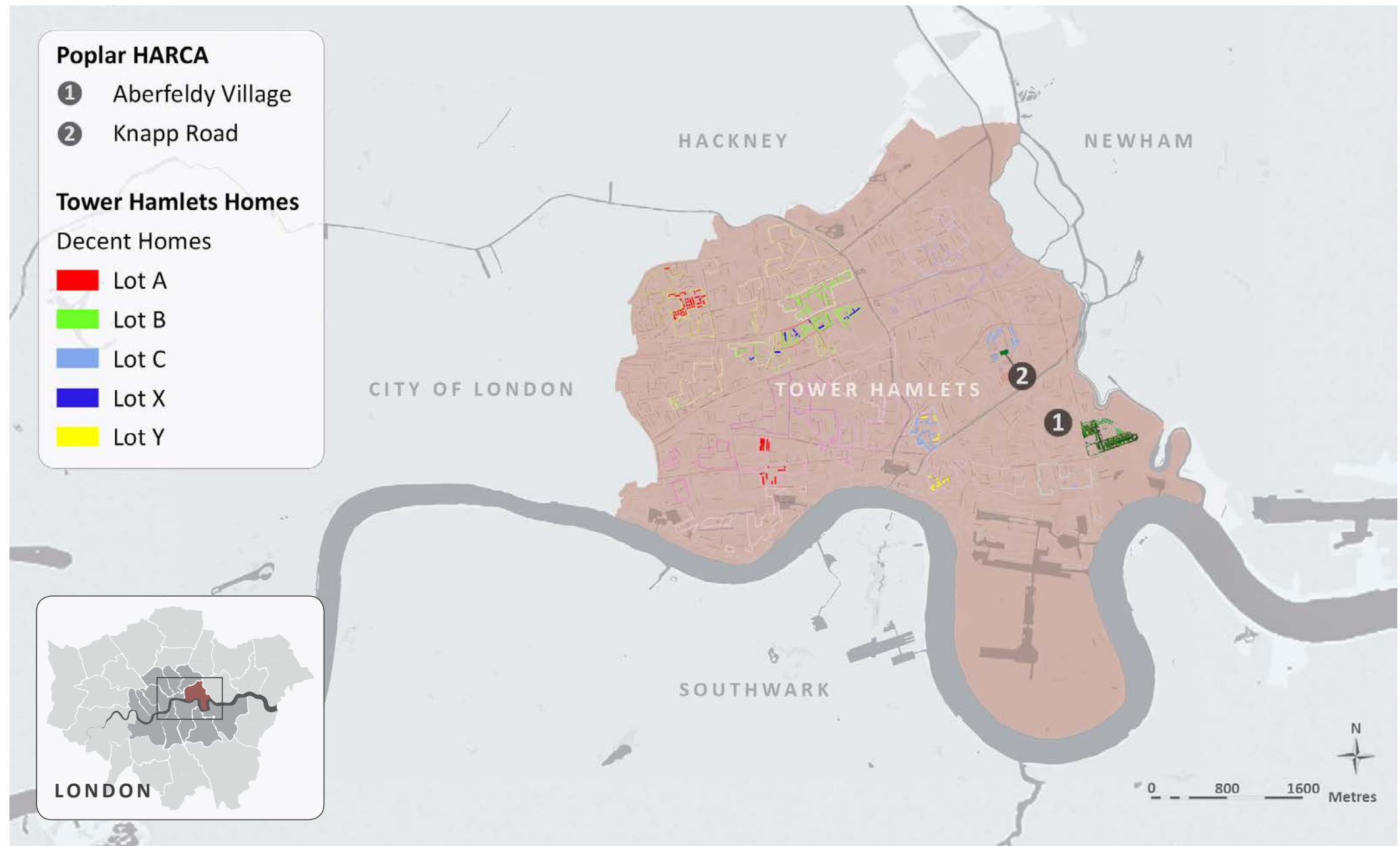
<sup>2</sup> UCL Centre for Resource Efficiency & the Environment, UCL Circular Economy Lab

# PRESENTATION STRUCTURE



# INITIAL CASE STUDY PROJECTS

## UNDERSTANDING CURRENT CONSTRUCTION WASTE MANAGEMENT





# REFURBISHMENT AND REDEVELOPMENT CASE STUDY PROJECTS



**Decent Homes refurbishment**



**Aberfeldy Phase 2 demolition**



**Aberfeldy Phase 1 construction**

# TRACKING CURRENT WASTE FLOWS AND BARRIERS TO CHANGE

## FIELD WORK AND LONG INTERVIEWS

*Part of process specific to strip out from many individual properties*



Strip out from property



Temporary holding place awaiting collection



Consolidation in mixed skip at site compound



Full skip transported to waste transfer station



*Part of process at waste transfer station*



Manual and plant sorting of large items



Trommel screening of smaller waste streams



Segregation of different waste fractions



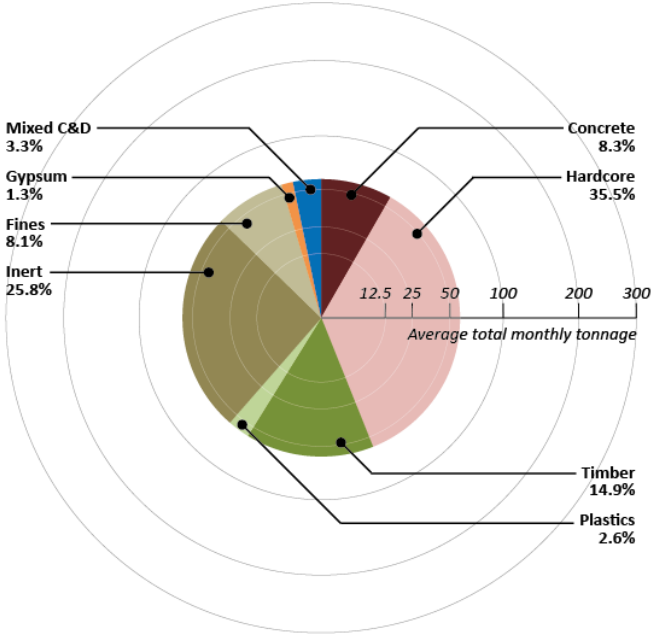
Secondary processing ready for recycling etc.



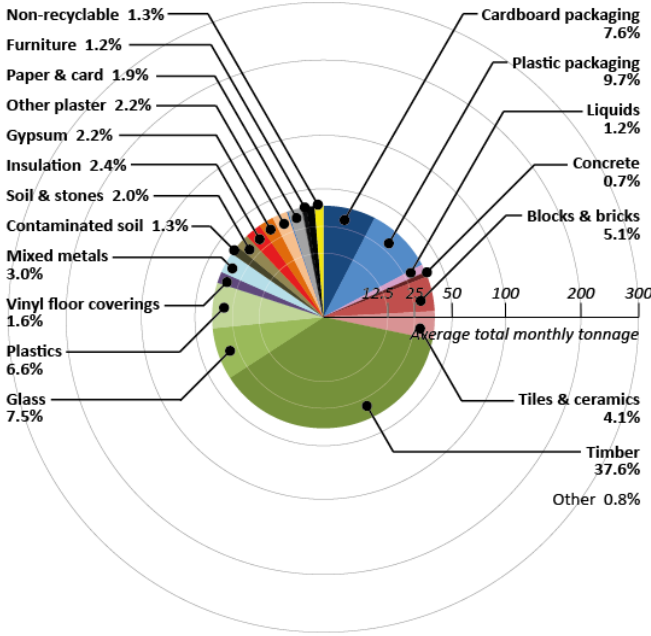
# COLLATED WASTE DATA

## TIMING OF WASTE REPORTING

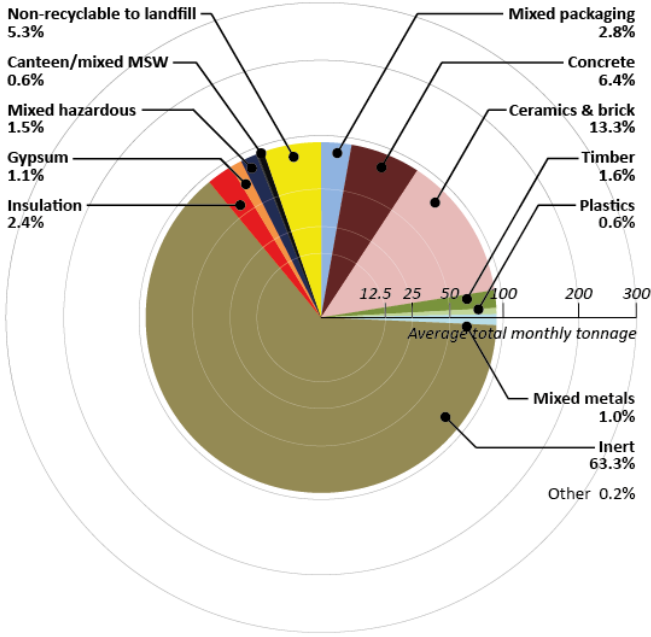
### QUANTITATIVE REPORTING ONLY



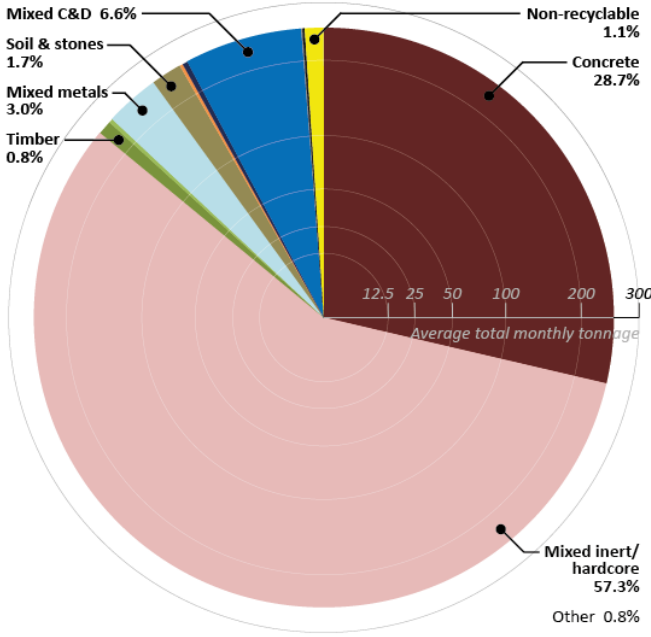
(i) REFURBISHMENT, LOT A



(ii) REFURBISHMENT, LOT C

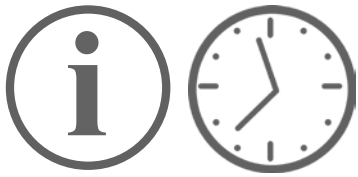


(iii) LARGE NEW BUILD (NO DEMOLITION)

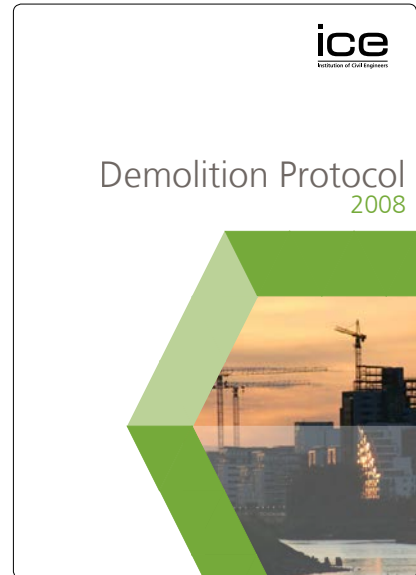


(iv) SMALL NEW BUILD (WITH DEMOLITION)

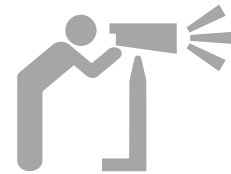
## 1. Earlier identification of resources



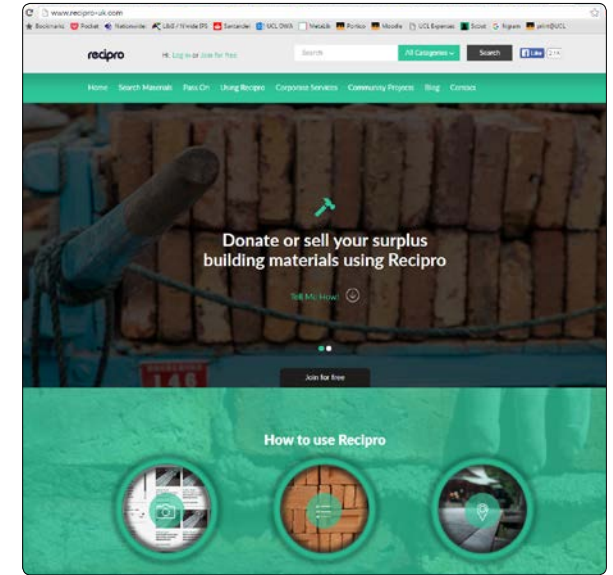
Pre-demolition audits



## 2. Overcoming vantage point problem



Online materials marketplaces



# OBJECTIVES AND EXAMPLE INITIATIVES

## 3. Mobilising designers' creativity

Whole House Reuse project



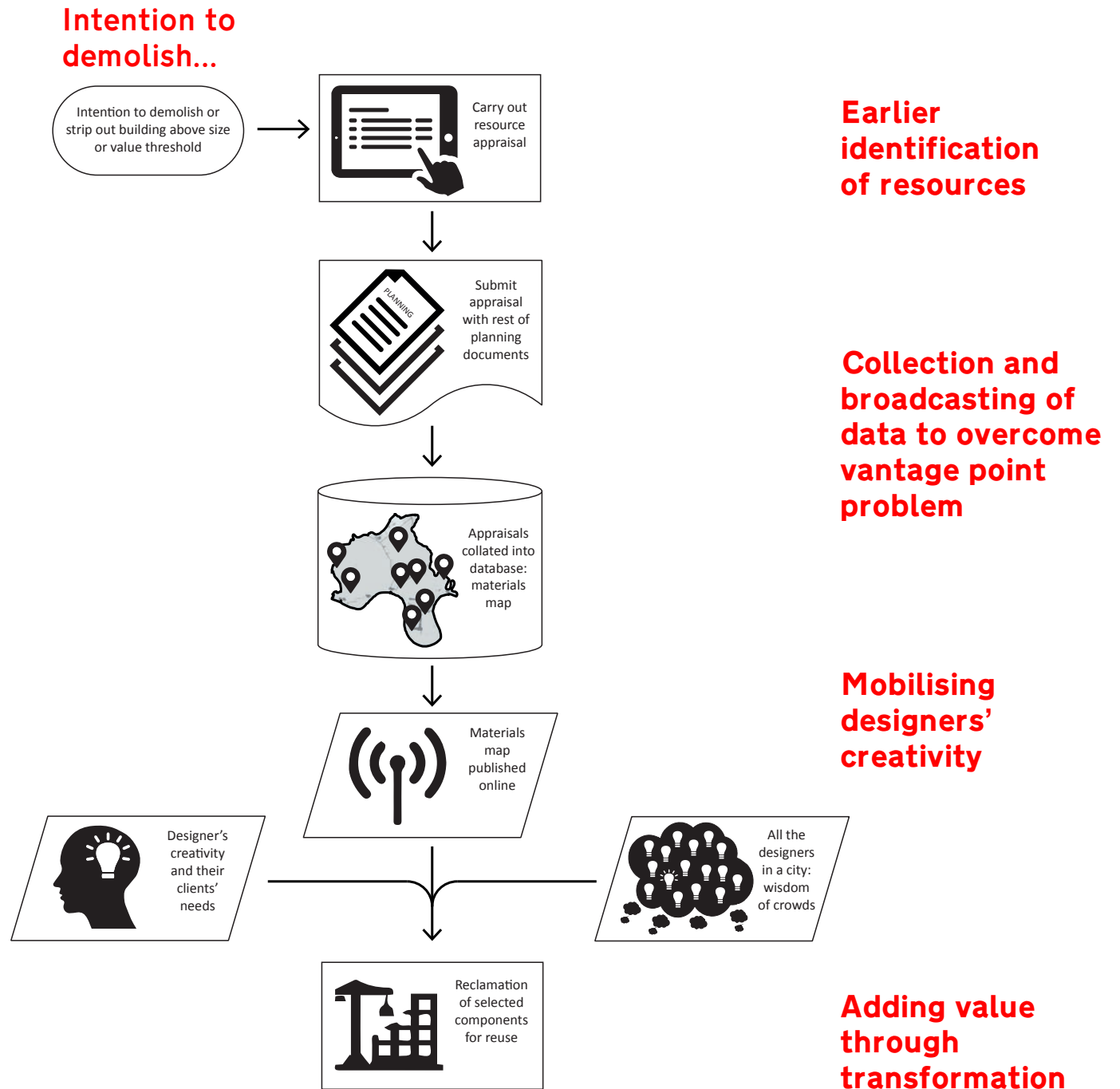
## 4. Adding value through transformation

Superuse Studios



# TRIAGE PROPOSAL

## A WAY TO SEPARATE OUT COMPONENTS FOR REUSE

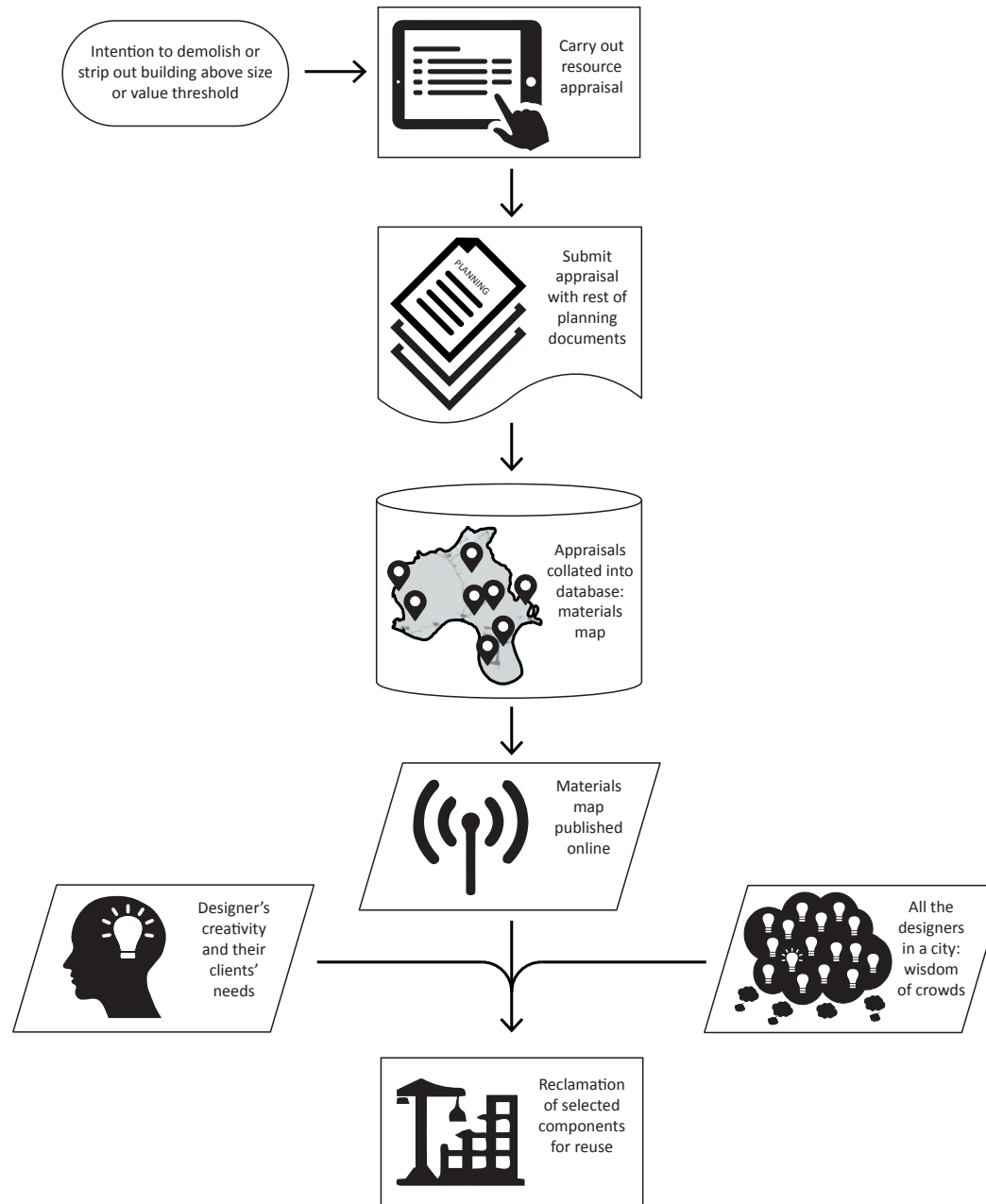




# TRIAGE CASE STUDY

## COMPONENTS FROM SOON-TO-BE-DEMOLISHED HOUSING

### REUSED IN AN OFFICE FIT-OUT



# EARLY IDENTIFICATION

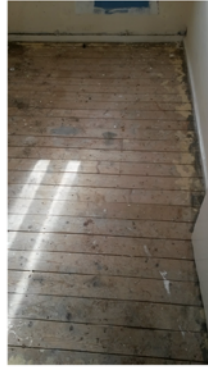
## PHOTOGRAPHIC SURVEY OF POTENTIAL COMPONENTS



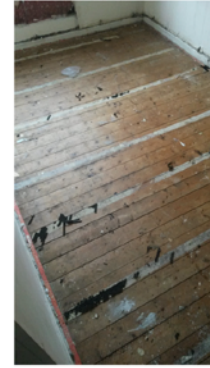
G20 square timber post



K20 softwood floorboards(1)



K20 softwood floorboards(2)



K20 timber floorboards(3)



L10 glazed overpanel(1)



L10 glazed overpanel(2)



L10 glazed overpanel(3)



L10 obscure glazed overpanel



L20 external door timber panelled



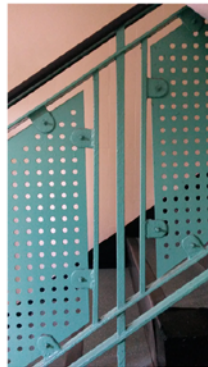
L20 internal door flush hollow core



L20 kitchen hatch



L30 metal balustrade and handrail



L30 metal balustrade perforate panels



L30 metal balustrade



L30 timber balustrade

# EARLY IDENTIFICATION

## PHOTOGRAPHIC SURVEY OF POTENTIAL COMPONENTS



L30 timber staircase



M40 ceramic tile window cill(1)



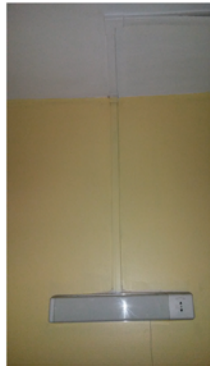
M40 ceramic tile window cill(2)



P21 heavy duty door hinges



V21 fluorescent lighting - bathroom(1)



V21 fluorescent lighting - bathroom(2)



V21 fluorescent lighting - circulation



V21 light fittings



V22 meter cabinet type 1 door



V22 meter cabinet type 1 frame



V22 meter cabinet type 2 door



V22 meter cabinet type 2 frame



V22 meter cabinet type 2 inside of door



V22 meter cabinet type 2 reveal



W90 intercom receiver



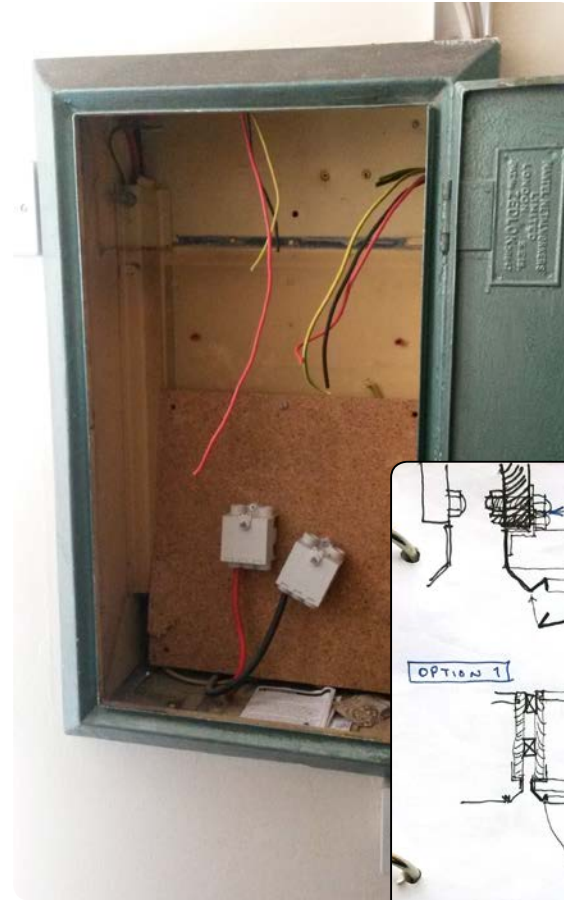
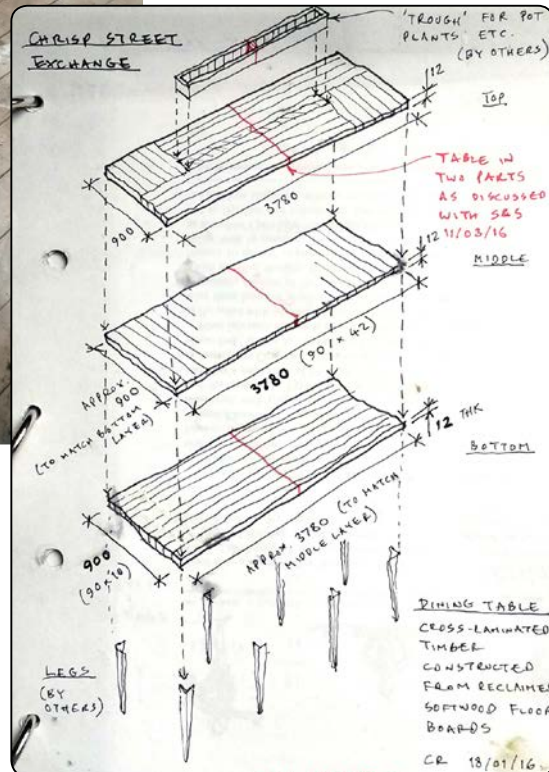
# MOBILISING DESIGNERS' CREATIVITY

RECORDING QUALITATIVE INFORMATION NEEDED BY DESIGNERS (NOT JUST WASTE QUANTITY)



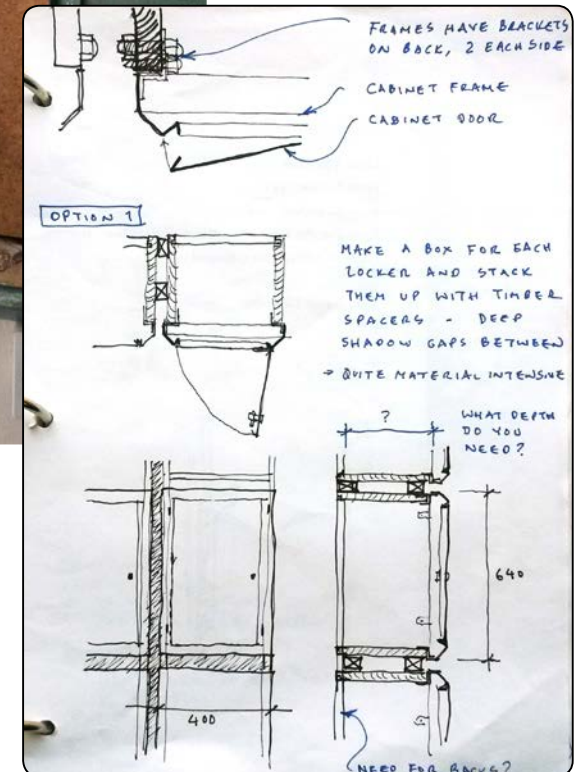
Pine floorboards  
120mm x 20mm  
Tongue and groove  
Generally good condition

→ Cross-laminated timber?



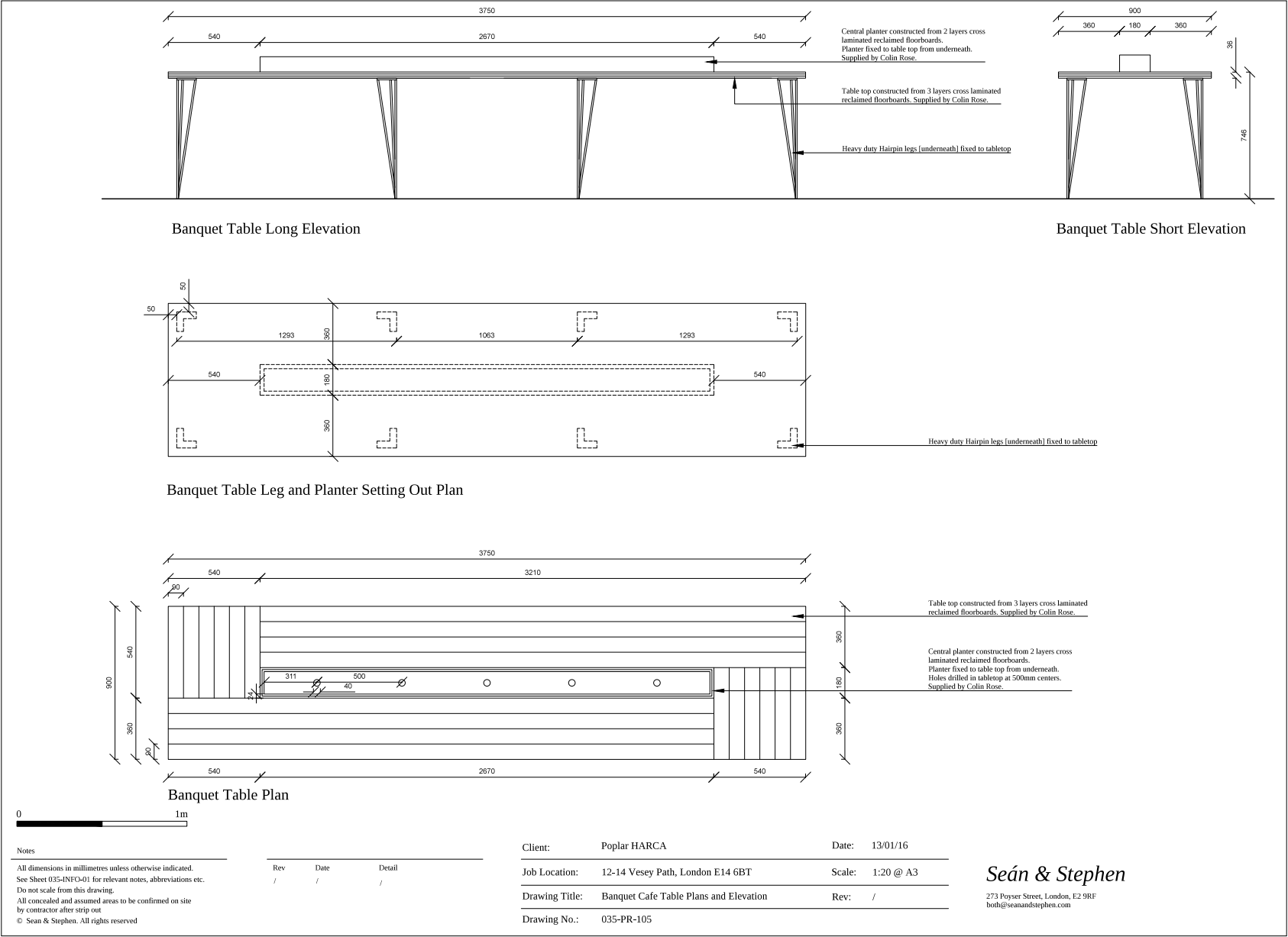
Meter cabinet doors  
640mm x 300mm  
Different finishes  
Working hinges

→ Locker doors?



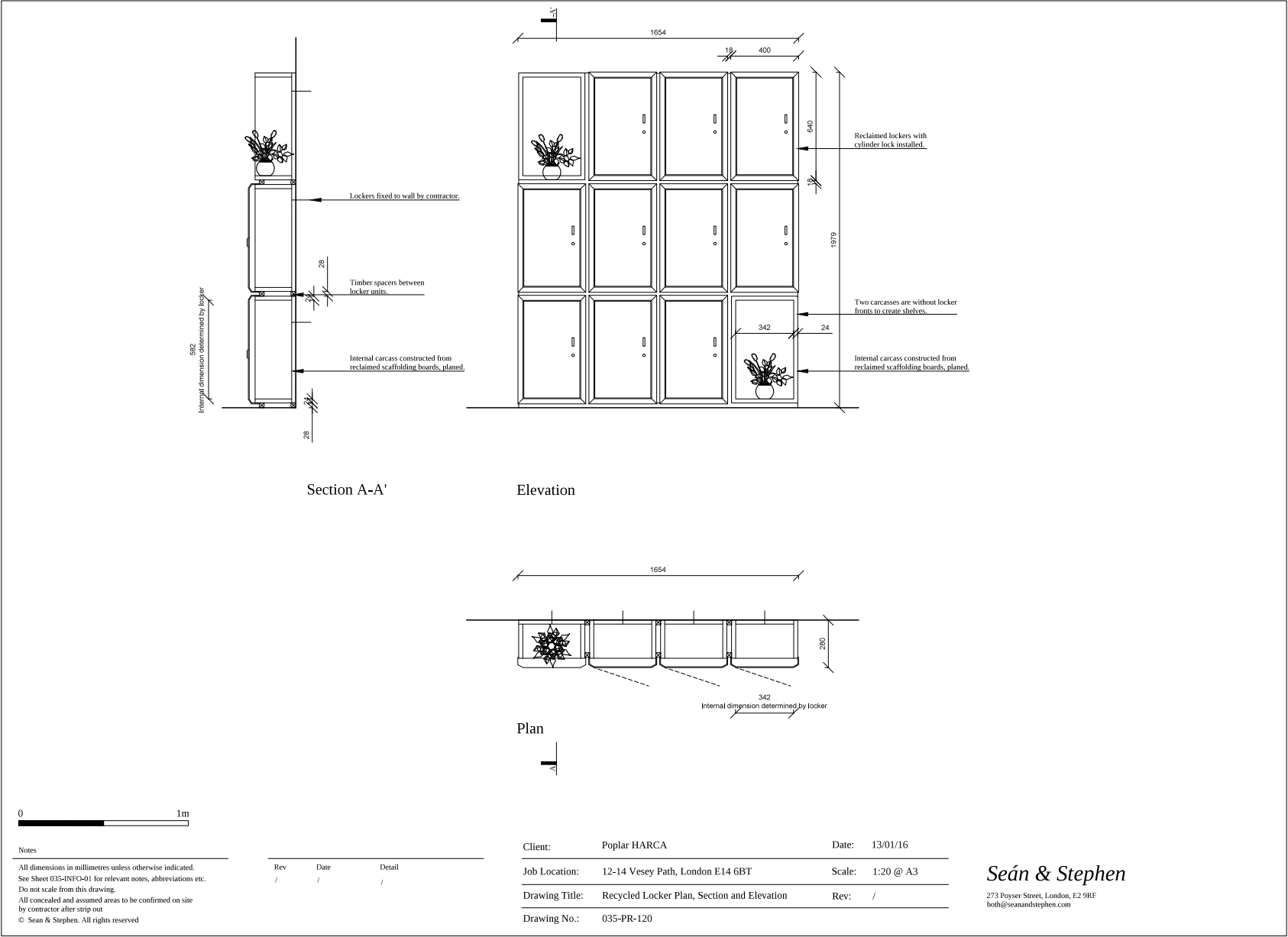
INCORPORATE INTO DESIGN PROCESS

ACT LIKE STANDARD SUPPLIERS, COLLABORATING ON DESIGN AND PROVIDING COSTS



# INCORPORATE INTO DESIGN PROCESS

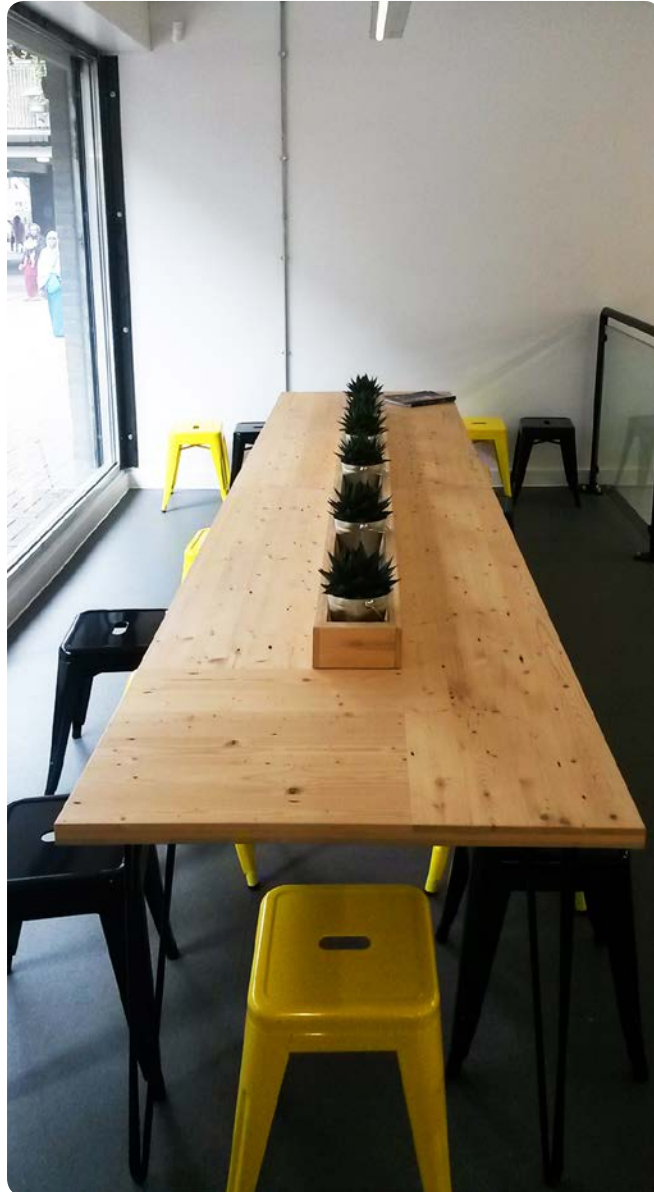
## ACT LIKE STANDARD SUPPLIERS, COLLABORATING ON DESIGN AND PROVIDING COSTS





# ADD VALUE BY TRANSFORMING WASTE

## RECLAMATION AND REMAKING PROCESSES



# ADD VALUE BY TRANSFORMING WASTE

## RECLAMATION AND REMAKING PROCESSES



**install**  
as lockers at Chrisp  
Street Exchange



**reclaim**  
meter cabinet doors  
and scaffold boards



local  
network:  
reclaimers  
and  
remakers



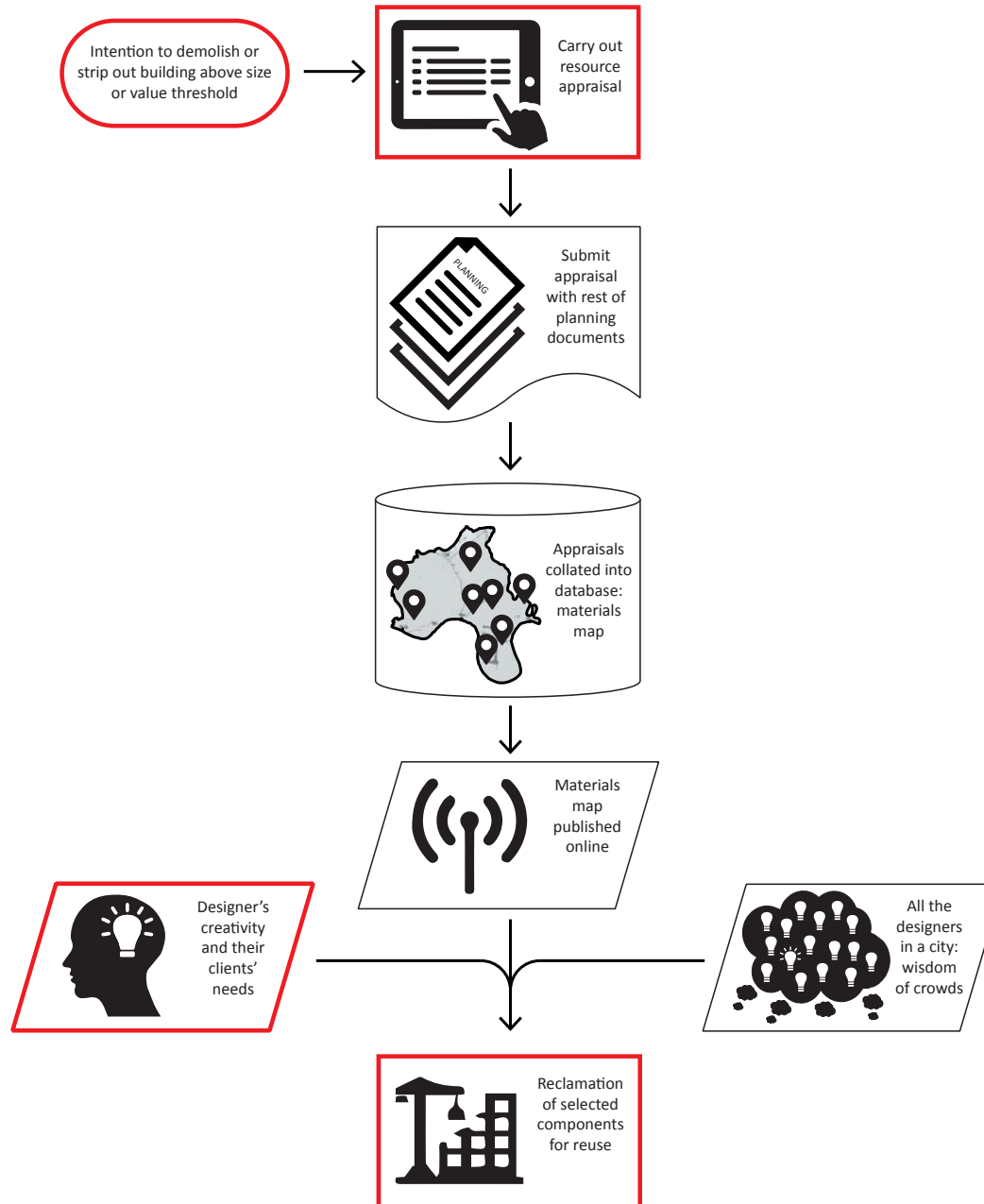
**remake**  
simple carpentry  
and fit locks



**prepare**  
check doors and plane  
boards for assembly

# REFLECTION ON PROCESS

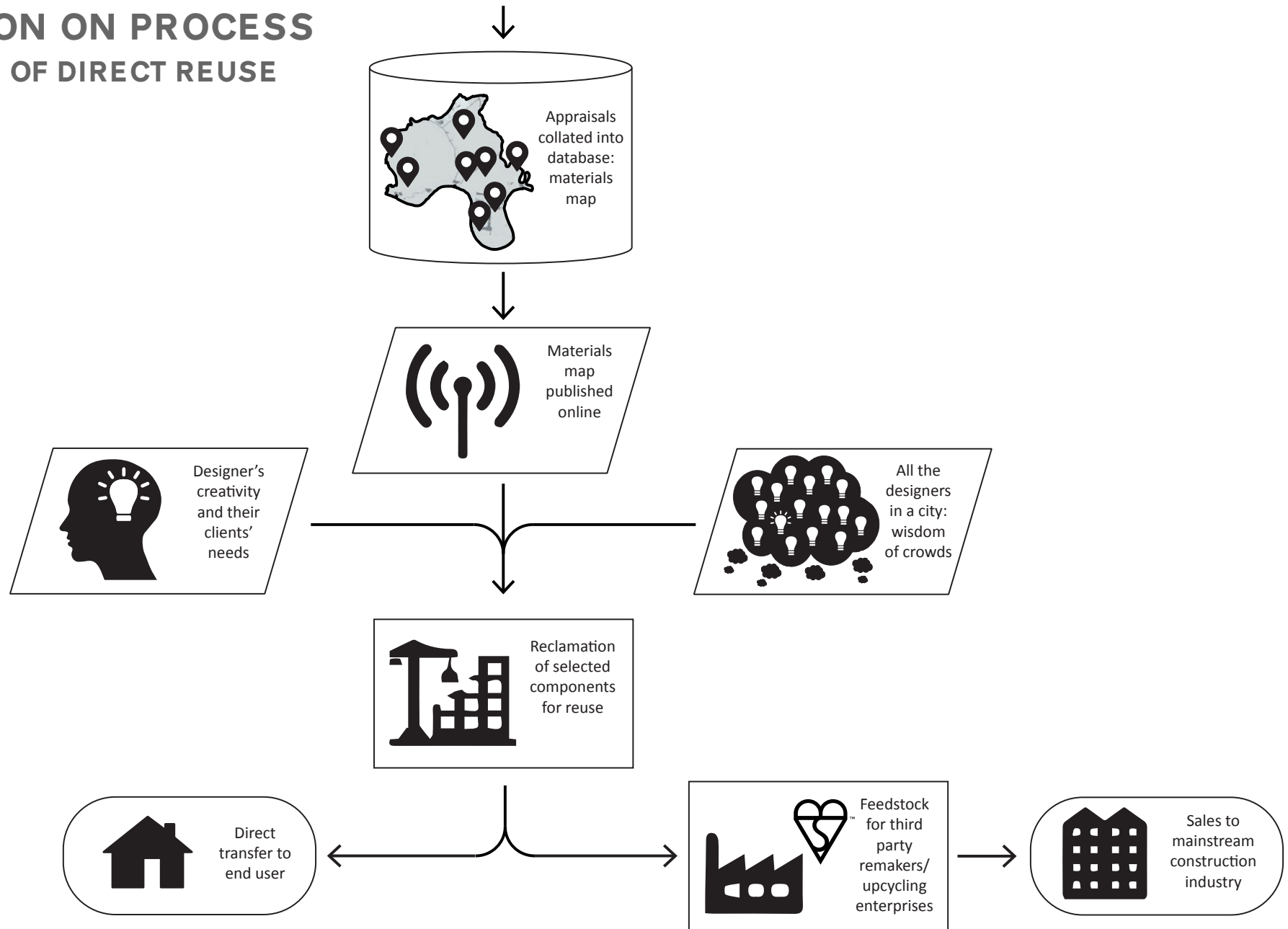
## PARTS OF PROCESS TESTED





# REFLECTION ON PROCESS

## LIMITATIONS OF DIRECT REUSE

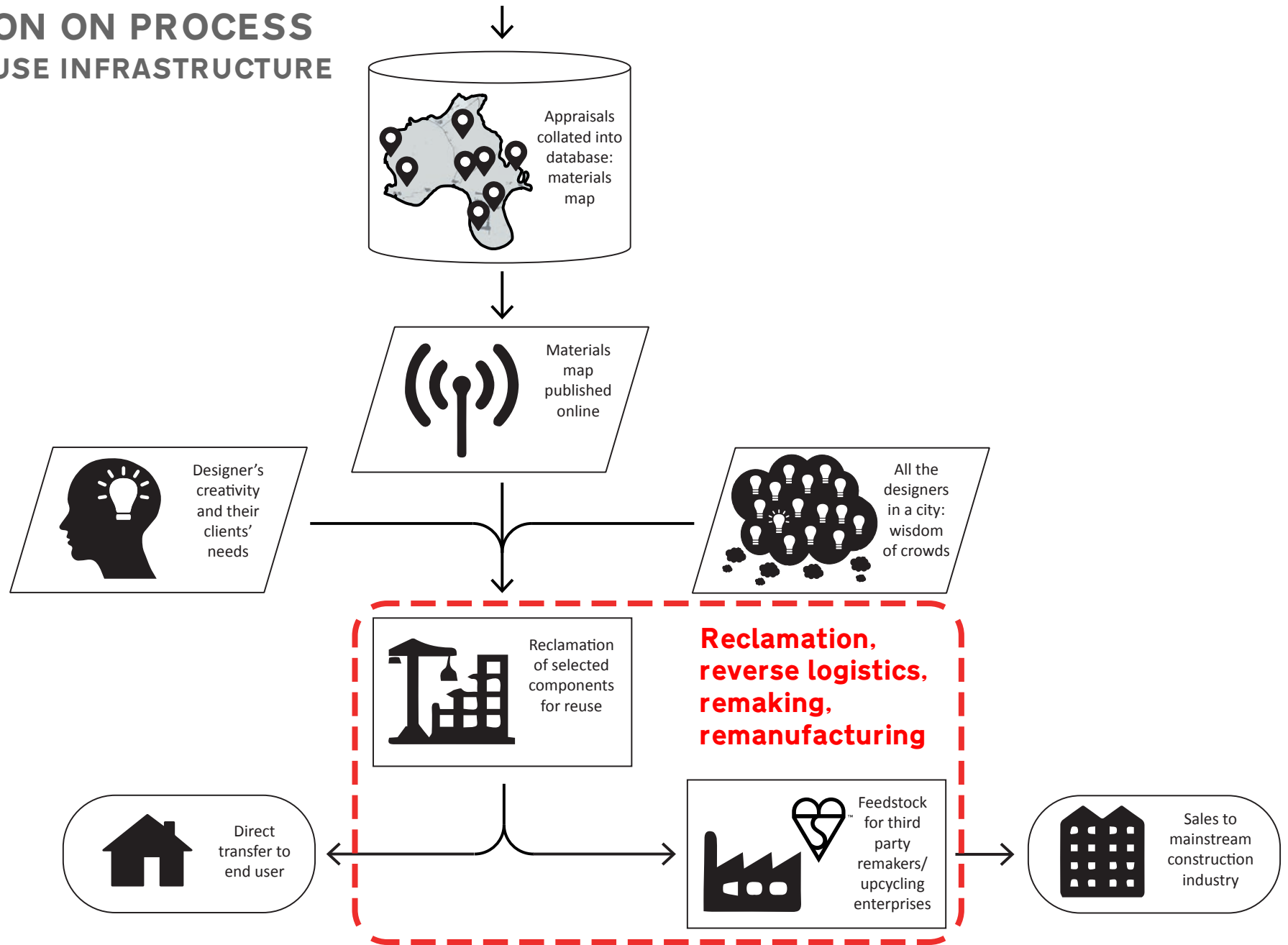


**Direct, ad hoc reuse in a local community**

**Formalised reuse/upcycling, serving mainstream construction industry**

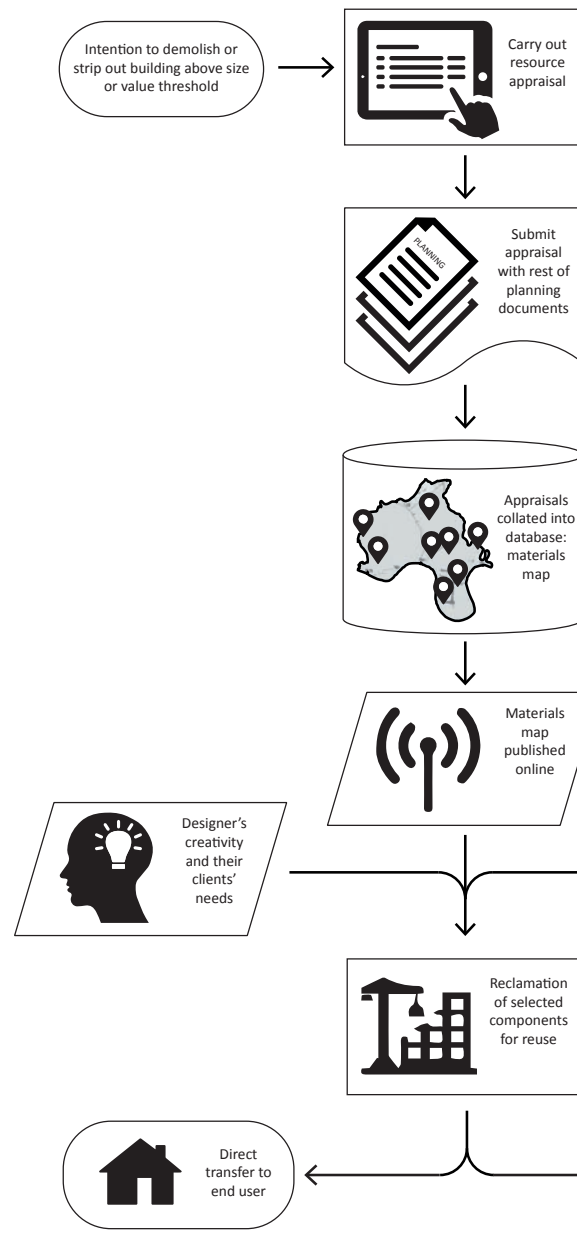
# REFLECTION ON PROCESS

## MISSING REUSE INFRASTRUCTURE

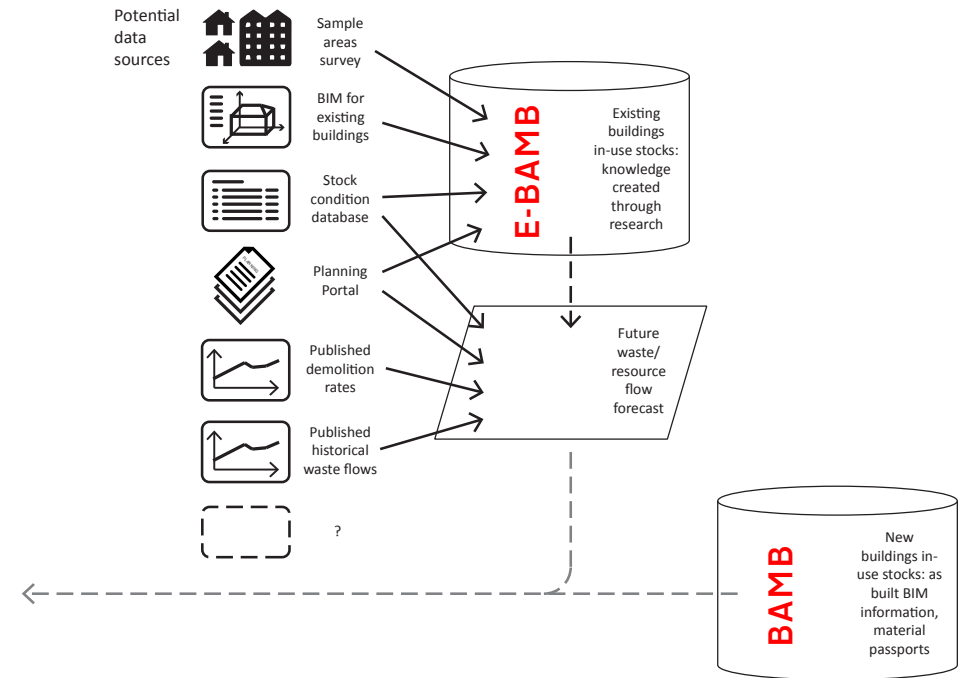


# REFLECTION RELATIONSHIP TO WIDER RESEARCH TOPICS

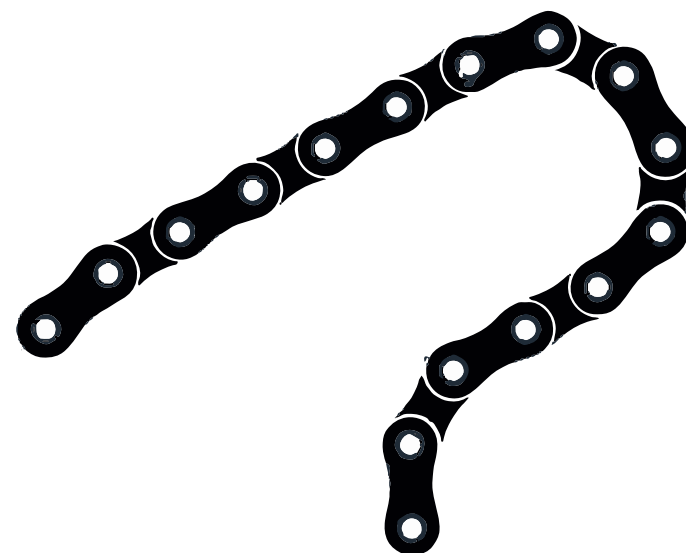
## Triage: project-based, short- to medium- term planning



## Building stocks approaches: research-based, medium- to long-term planning







## QUESTIONS OR COMMENTS?

Thanks for listening!

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