Introduction

Content

- Adaptive reuse drivers - demand driven vs. supply driven
- Value in use and obsolescence: market, legal, functional, technical, aesthetic, cultural, sustainability, financial and future value
- 4 options: Status quo, renovation, demolition or adaptive reuse
- Defining the adaptive reuse potential
- Adaptive reuse as real estate management
- Some successful cases from the Dutch situation
Adaptation drivers
Adaptation drivers

- Social, economic, environmental
- Lending character and identity to an area
- Obsolete buildings blight areas socially and economically
- Adapting obsolete buildings increases value of buildings and area
- Adaptation cheaper than new build
- Dutch office market 15% vacancy – of which 50% is structurally vacant or redundant
- Increase lifespan and improve efficiency of buildings to improve environmental sustainability
Sustainability as a driver

High GHG emissions: Re-use to reduce energy use

Construction industry:
- 7% of the energy consumption
- 25% of all transport
- 35% of all waste

Built environment:
- Contributes nearly half of all greenhouse gas (GHG) emissions
Drivers for new buildings
Some quotes from interviews with practice

- New buildings are qualitatively “better”
- New way of working is not possible in existing buildings
- Need for sustainable (new) buildings
- Need for image delivered by a new building
Literature review and interviews

Drivers and barriers

- Continued use of beloved buildings
- Perceived ‘character’ can drive up sales and interest
- Urban regeneration
- Urban policy
  - Councils may give developers a better hearing where buildings are retained
  - Sometimes zoning makes conversion the only option
- Over supply of office stock
- Demand for inner city housing
- Sustainable alternative to new build
- Conversion costs are typically lower than demolish and new build
- Technical ease of reconfiguration / change of use
Literature review and interviews

Drivers and barriers

- Social infrastructure may not exist in city centres
- Zoning and building regulations
  - Always some compromise on space planning with existing buildings
- Condition of the building and suitability for conversion
- Costs associated with some designs require additional expense to render the building attractive to residential investors/buyers
- Appearances of most offices typically do not lend themselves to conversion without changes to facades
- Investors’ preference for new build - perception most people would prefer new build
- Unknown costs can escalate prices considerably
- Contamination potential
Drive for new developments
“What used to fit in an office now fits in your pocket”
Vacancy

What to expect

- Continuous high office vacancy Dutch office market
- Strong indications for hidden vacancy (unregistered vacancy)
- Hidden vacancy will be added to the registered vacancy when lease contracts expire
- 2 main reasons:
  - Layoffs of employees: less FTE’s
  - New ways of working: decreasing floor space to workers ratio
- note: different developments in office market segments
Hidden vacancy
Influence on real estate

Demand user
> New build

Supply offices
> vacancy

Contract duration

New developments

+8 million m²

Source: Lokhorst (2013)
Office market
Developments and Trends

Illustrations: Van Wingerden (2013)

Source: Lokhorst (2013)
Hidden Vacancy

Floor Space to Workers Ratio

Source: Lokhorst (2013)
Hidden Vacancy
Future Expectation: Increase of 12.5%

Taking account off:
- Expire date lease contracts
- Segments structure
  - Employment developments
  - Adaption rate new ways of working
- Office stock developments

Source: Lokhorst (2013)
Value in use

Market, legal, functional, technical, aesthetic, cultural, sustainability, financial and future value
Use value?
Sustainability

Energy and materials

- Life span
  - Material costs
  - Energy costs
  - Environmental load
- Building adaptability
  - technical
  - functional
  - aesthetic

(Wilkinson, Remøy and Langston 2014, Jansz, Remøy and van den Dobbelsteen forthcoming)

Best practices – Central Post in Rotterdam
Societal value

From vacant to lively

- Corporate social responsibility
- Employment
- Breeding place
- Neighbourhood development
- Stop decay
- Temporary solutions: room for experiments

(Remøy, Geraedts and Blom 2012)

Best practices - Grote Pyr – former HBS, den Haag
Experience value

Image and identity

- Trusted ugliness
- Cultural historic value
- Symbolic value
- demolished and regretted
- Traumatic experience value
- Use value
- Situation value

(Wilkinson, Remøy and Langston 2014, Benraad and Remøy 2007)

De Witte Dame in Eindhoven
Financial value

Highest and best use

- Possible benefits
  - Office market vs housing market
- Legally possible
- Adaptability building
  - technical
  - functional
  - aesthetic
- Financial feasibility

(Remøy and van der Voordt 2014, Muller, Remøy en Soeter 2008)

Best practices – Molenwerf in Amsterdam
Creative industry

New ways of communicating – network societies
## Accommadation preferences

### Push factors

<table>
<thead>
<tr>
<th>Year</th>
<th>Lack expansion space</th>
<th>Organisational considerations</th>
<th>Poor condition of the premises</th>
<th>Threat of expropiation/lease termination</th>
<th>No representative environment</th>
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## Accommodation preferences
### Pull factors

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<td>Possibility of extension</td>
<td>Convenient traffic location</td>
<td>Convenient traffic location</td>
<td>Convenient traffic location</td>
<td>Representative building</td>
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<td>Available premises</td>
<td>Favourable local traffic</td>
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<td>Convenient traffic location</td>
<td>Low cost land and buildings</td>
<td>Available premises</td>
<td>Low land price</td>
<td>Representative environment</td>
<td>Improved public transportation accessibility</td>
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<td>Favourable local traffic</td>
<td>Better accessibility for customers</td>
<td>More parking possibilities</td>
<td>Representative environment</td>
<td>Low land price</td>
<td>Improved car accessibility</td>
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</table>

Market performance
Location

Asking rent per sq. m.

Legend
Nominaal huur per m²
- 60 - 132
- 132 - 168
- 168 - 210
- 210 - 250
- 250 - 305

Sources:
Map material - © Gemeente Amsterdam Geo en Vastgoedinformatie
Transaction data - D7Z Zandbergen
Real Estate & Housing, TU Delft
Market performance

Location

Remøy 2010

Legend
Structural vacancy as percentage of total supply
- 2.5%
- 2.6% - 5.0%
- 5.1% - 10.0%
- 10.1% - 20.0%
- 20.1% - 34.5%

Sources:
Map material - © Gemeente Amsterdam
Geo en Vastgoedinformatie
Data: DMB/DTZ Zadelhoff
Real Estate & Housing, TU Delft
Market Performance

Submarkets

Source: R. van Wingerden (2013)
Market Performance

Submarkets

Large differences

Source: R. van Wingerden (2013)
Market performance
Location value - spatial concentration of rental prices

![Graph showing the relationship between building quality and rent level.](image)
Factors affecting willingness to pay
Office users preferences

Location, location, location:
• Accessibility by car and public transport
• Workers amenities
• Prestige of location

...and some building factors:
• Car parking
• External appearance/recognisability
• Space efficiency

(Koppels and Remøy, 2009, Economic Value of Image)
Willingness to pay
Hedonic Pricing Studies

<table>
<thead>
<tr>
<th>Author</th>
<th>Literature</th>
<th>Practice</th>
<th>Model</th>
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<tbody>
<tr>
<td>Clapp (1980)</td>
<td>Size, Building Age, No. Floors, Distance to major roads.</td>
<td>Interviews</td>
<td>Transaction Years</td>
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<td>Building Awards</td>
<td>Parking Spaces</td>
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<td>Hough and Kratz (1983)</td>
<td>Atriums</td>
<td>Average Floor Plate</td>
<td>Building Age</td>
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<tr>
<td>Dorion (1992)</td>
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<td>Laverne, Winson-Geideman (2003)</td>
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<td>Ho et al (2005)</td>
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<td>Floor Plate 0-2000</td>
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<td>Elevators Speed / Privacy</td>
<td>Categorical Prestige</td>
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<td>Fuerts (2011)</td>
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<td>Other tenants</td>
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Source:
Gutierrez Llaguno (2013)
### Fit Model

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<td>0.116</td>
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Source:
Gutierrez Llaguno (2013)
Willingness to pay
Hedonic Pricing Studies

Source: van de Erve (2011)
Willingness to pay
Hedonic Pricing Studies

Source: van de Erve (2011)
Influence of vacancy

Koppels, Remøy en Messlaki 2011

Office in use
Structurally vacant office
Office studied

Building size (GFA)

Distance matrix building i=1

<table>
<thead>
<tr>
<th>Stock building j=</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
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<tbody>
<tr>
<td>Distance</td>
<td>50m</td>
<td>150m</td>
<td>250m</td>
<td>300m</td>
<td>450m</td>
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</tbody>
</table>
Property attributes
Vacant buildings

- Monofunctional location
- Low prestige of location
- Few amenities in location
- Low quality of public space
- Low quality of external appearance
- Low quality of entrance and internal finishes
- Inflexible interior (structural and facade grid)

- Big buildings (+ 10,000m²)
- Construction year 1980-1995

Remøy, 2012
Types of obsolescence

Literature review

- Aesthetic (visual) obsolescence: result of outdated appearance
- Functional obsolescence: result of changing ways of working
- Legal obsolescence: result of new legal standards
- Social obsolescence: result of image issues and increasing occupier demands
- Tenure obsolescence: result of tenancy disagreements
- Structural (physical) obsolescence: also referred to as deterioration
- Financial obsolescence: result of misbalance between costs and benefits
- Environmental obsolescence: result of environmental changes
- Location obsolescence: functional obsolescence and image issues
- Site obsolescence: referring to misbalance between site and building value

Types of obsolescence

Literature review

- Types of obsolescence describe market, location and building level
- Types of obsolescence can be clustered in functional, technical and economic obsolescence

Types of obsolescence

Functional lifespan

- Performance level
- Investment moments
- Surplus
- Expectations
- 1st functional lifespan
- Demands
- Acceptation
- 2nd functional lifespan or end
- 3rd functional lifespan or end
- Time

De Jonge, 1991
**Types of obsolescence**

**Technical lifespan**

- **Performance level**
- **Maintenance intervals**
- **Investment**
- **Demands**
- **Acceptation**

Surplus

Expectations

**Time**

De Jonge, 1991
Types of obsolescence

Economic lifespan

Performance level

Investment moments

Surplus/yield

Costs

Return

Cycles / lower rents / vacancy

End of economic lifespan

Time

De Jonge, 1991
Rethink and reuse
The Netherlands: 8 000 000 m² offices – 2 000 000 m² retail – 2 000 000 m² monuments
4 options:
Status quo, renovate, demolish or adaptive reuse
Valuation of vacant properties

Experiences from practice

Differences in valuation depending on vacancy level and remaining lease term (Schiltz, 2006)

Experiences from practice with structural vacancy valuation:
€ 250-500/m²
Adaptation options – starting point

• Value assessment by NPV calculations
• Fixed IRR-demand:
• Band-width initial yields:
  - NIY – rented office space 6-8%
  - NIY – vacant office space 11-16%

4 options:
A: Consolidate / Keeping status quo
B: Renovate
C: Adaptive reuse / residential conversion
D: Demolish and new-build
## Adaptation options

### Example of comparison - finding the highest NPV

<table>
<thead>
<tr>
<th>Location: City centre</th>
<th>NPV building/plot investment scenarios</th>
</tr>
</thead>
<tbody>
<tr>
<td>GFA/LFA: 5941 m²/5050 m²</td>
<td>1. C  € 4.471.000</td>
</tr>
<tr>
<td>Vacancy: 52 %</td>
<td>2. D  € 4.248.000</td>
</tr>
<tr>
<td>IRR: 7%</td>
<td>3. B  € 2.130.000</td>
</tr>
<tr>
<td>Asking rent m² LFA: € 285</td>
<td>4. A  - € 104.000</td>
</tr>
<tr>
<td>Densification possible:</td>
<td>A: Consolidate</td>
</tr>
<tr>
<td>One extra floor</td>
<td>B: Renovate</td>
</tr>
<tr>
<td>Groundfloor: Office, shops, cafe</td>
<td>C: Residential conversion</td>
</tr>
<tr>
<td></td>
<td>D: Demolish and new-build</td>
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</tbody>
</table>
Adaptation options

Example of comparison - finding the highest NPV

<table>
<thead>
<tr>
<th>Consolidate:</th>
<th>Residential conversion:</th>
<th>Demolish and re-build:</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Operating costs: 10% of rent</td>
<td>- Selling price: 4600/m² LFA</td>
<td>- Selling price: 4600/m² LFA</td>
</tr>
<tr>
<td>- Operating period: 10 years</td>
<td>- Construction cost: 1630/m² GFA</td>
<td>- Construction costs: 1730/m² GFA</td>
</tr>
<tr>
<td>- Exit yield: 9.1%</td>
<td>- 1500m² added (extra floor)</td>
<td>- 1500m² added (extra floor)</td>
</tr>
<tr>
<td>- Inflation: 2.5%</td>
<td>- Construction period: 3 years, apartments sold</td>
<td>- Construction period: 3 years, apartments sold</td>
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<tr>
<td>- Vacancy: 52%</td>
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<table>
<thead>
<tr>
<th>Renovate:</th>
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</thead>
<tbody>
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<td>- Operating costs: 10% of rent</td>
<td></td>
</tr>
<tr>
<td>- Operating period: 9 years</td>
<td></td>
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<tr>
<td>- Construction period: 1 year</td>
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<tr>
<td>- Exit yield: 8.4%</td>
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<tr>
<td>- Renovation cost: 1500 euro/m²</td>
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<tr>
<td>- Vacancy after renovation 25%</td>
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Adaptation options

Example of comparison - finding the highest NPV

Bijlmerdreef 98

<table>
<thead>
<tr>
<th>Amsterdam Zuidoost</th>
<th>Location: Office area</th>
<th>NPV building/plot investmentscenarios</th>
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<tbody>
<tr>
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<td>GFA/LFA: 5931 m²/5041 m²</td>
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<td>Vacancy: 100 %</td>
<td>2. D € 2.806.000</td>
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<td></td>
<td>Asking rent m² LFA: € 140</td>
<td>3. B € 220.000</td>
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<td>Densification: one extra floor</td>
<td>4. A € -47.000</td>
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<td></td>
<td>Groundfloor: Office, shops, cafe</td>
<td>A: Consolidate</td>
</tr>
<tr>
<td>Bijlmerdreef 98</td>
<td></td>
<td>B: Renovate</td>
</tr>
<tr>
<td></td>
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<td>C: Residential conversion</td>
</tr>
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<td></td>
<td></td>
<td>D: Demolish and new-build</td>
</tr>
</tbody>
</table>
Adaptation options
Example of comparison - finding the highest NPV

Consolidate:
• Operating costs: 10% of rent
• Operating period: 10 years
• Exit yield: 9.1%
• Inflation: 2.5%
• Vacancy: 55%

Renovate:
• Operating costs: 10% of rent
• Operating period: 9 years
• Construction period: 1 year
• Exit yield: 8.4%
• Renovation cost: 1400 euro/m²
• Vacancy after renovation 30%

Residential conversion:
• Selling price: 2600/m² LFA
• Construction cost: 1380/m² GFA
• 1200m² added (extra floor)
• Construction period: 3 years, apartments sold

Demolish and re-build:
• Selling price: 2600/m² LFA
• Construction costs: 1480/m² GFA
• 1500m² added (extra floor)
• Construction period: 3 years, apartments sold
Net present value

Example of comparison - finding the highest NPV

Difficulties in comparison:
- Asking rent offices
- Exit yield for offices
- If the office is vacant, the problem of valuation of the office remains
- Residential conversion or demolish / rebuild is sold after completion – the four models are difficult to compare
- Construction costs based on experience
Defining the adaptive reuse potential
Scale of analysis
Defining the study area

City
Neighbourhood
Site & Building

Jones 1995; Hall 1999; Mouzakis and Henneberry 2008
Adaptive reuse studies

Increased conversion potential

- Low office purchasing price
- High housing price
- Multifunctional location or housing location
- Good air quality and no noise in location
- Large scale building
- Extendable building
- Adaptable main structure
- Good technical state
- Reusable stairs and elevators
- Aesthetic quality

Highest and Best Use
Approach to deciding conversion potential

- Yield /GFA Function x
- Costs /GFA Function y
= Value object /GFA For function y

Function A
Function B
Function C

HBU expected
Highest and Best Use
For each adaptive reuse option – focus on residential conversion

- Market demand for new function
- Legal criteria
- Functional and technical feasibility
- Financial feasibility
- Highest yield

Residential conversion

Value of the location

Municipalities with high vacancy

Shrinking municipalities

Sources:
- DTZ Zadelhoff
- Offices in figures

Sources:
- CBS Nederland Regionaal
Residential conversion

Value of the location

Municipalities with high vacancy

Growing municipalities

Sources:
DTZ Zadelhoff
Offices in figures

Sources:
CBS Nederland Regionaal
Market performance
Possible function that yields more than offices

Housing, apartment selling price per m² in Amsterdam
Factors affecting willingness to pay

Housing preferences

Location, location, location:
- Accessibility by car and public transport
- Facilities
- ‘type’ of location: city centres

...and some building factors:
- Type of housing
- Size
- External appearance, interior experience

(Muller, 2008; Schmidt, 2012, in repository TU Delft)
Demand structure

Identifying demand

- Demand drivers, function specific
- Within each function, different target groups

- Office users: i.e. as defined by CBS as different office sectors
- Housing: defined by government by household size, income, age, lifestyle...
Market prediction
For each ‘type’ of real estate

- Quantification of historic (net) take-up
- Macro/regional/urban economic platform
- Individual forecasts for each demand component

- Development pipeline
- Historic levels of building
- Correct for macroeconomic trends
Residential conversion

Legal criteria
## Residential conversion

### Location criteria

<table>
<thead>
<tr>
<th>Aspect</th>
<th>Gradual criterion</th>
<th>Data source</th>
<th>Appraisal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Functional</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 Urban location</td>
<td>1 Building in industrial or office park</td>
<td>Town map</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2 Building gets little or no sun</td>
<td>On-site</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3 View limited by buildings on &gt; 75% of floor area</td>
<td>On-site</td>
<td></td>
</tr>
<tr>
<td>2 Amenities</td>
<td>4 Shops for daily necessities &gt; 1 km</td>
<td>On-site</td>
<td></td>
</tr>
<tr>
<td>distance and quality;</td>
<td>5 Neighbourhood meeting-place &gt; 500 m</td>
<td>On-site</td>
<td></td>
</tr>
<tr>
<td>number, variety and level of</td>
<td>6 Hotel/restaurant/snackbar &gt; 500 m</td>
<td>On-site</td>
<td></td>
</tr>
<tr>
<td>services.</td>
<td>7 Bank &gt; 1 km</td>
<td>On-site</td>
<td></td>
</tr>
<tr>
<td></td>
<td>8 Basic medical facilities &gt; 1 km</td>
<td>On-site</td>
<td></td>
</tr>
<tr>
<td></td>
<td>9 Sports facilities &gt; 1 km</td>
<td>On-site</td>
<td></td>
</tr>
<tr>
<td></td>
<td>10 Education &gt; 2 km</td>
<td>On-site</td>
<td></td>
</tr>
<tr>
<td>3 Public transport</td>
<td>11 Distance to railway station &gt; 1 km.</td>
<td>Map</td>
<td></td>
</tr>
<tr>
<td></td>
<td>12 Distance to bus/metro &gt; 200m</td>
<td>Transport company</td>
<td></td>
</tr>
<tr>
<td>4 Accessibility by car and</td>
<td>13 Many obstacles; traffic congestion</td>
<td>On-site</td>
<td></td>
</tr>
<tr>
<td>parking</td>
<td>14 Distance to parking sites &gt; 250 m</td>
<td>Inspection/ design</td>
<td></td>
</tr>
<tr>
<td></td>
<td>15 &lt;1 parking space/100 m2 dwelling surface</td>
<td>Inspection/ design</td>
<td></td>
</tr>
</tbody>
</table>

Source: Geraedts and van der Voordt, 2007
## Residential conversion

### Building criteria

<table>
<thead>
<tr>
<th>ASPECT FUNCTIONAL</th>
<th>GRADUAL CRITERION</th>
<th>DATA SOURCE</th>
<th>Appraisal</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Year of construction or renovation</td>
<td>1 Office building recently built (&lt; 3 years)</td>
<td>Year of construction</td>
<td>Appraisal</td>
</tr>
<tr>
<td>2 Vacancy</td>
<td>2 Recently renovated as offices (&lt; 3 years)</td>
<td>Year of renovation</td>
<td>Ditto</td>
</tr>
<tr>
<td>3 New dwelling units</td>
<td>3 Some office space still in use</td>
<td>Estate agent</td>
<td>Ditto</td>
</tr>
<tr>
<td></td>
<td>4 Building unoccupied &lt; 3 years</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4 Extendibility</td>
<td>5 ≤ 20 units (50 m² each) can be made</td>
<td>≤ 1000 m²</td>
<td>Design sketch</td>
</tr>
<tr>
<td></td>
<td>6 Layout suitable for local target groups</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>7 Not horizontally extendable (neighbouring buildings)</td>
<td>On-site</td>
<td></td>
</tr>
<tr>
<td></td>
<td>8 No extra storeys (pitched roof; insufficient load-bearing capacity)</td>
<td>On-site</td>
<td></td>
</tr>
<tr>
<td></td>
<td>9 Basement cannot be built under building</td>
<td>On-site or Estate agent</td>
<td></td>
</tr>
</tbody>
</table>

Source: Geraedts and van der Voordt, 2007
Residual calculations

Feasibility studies

Gross (re)development value - Investment costs = > 0

Investment costs = property acquisition costs + re-development costs + profit margin developer

- Use of models calculate *feasibility* of investments
- Using reference values or case studies

Based on:
- return of new function
- (operating costs)
- Redevelopment design
- Redevelopment costs
- Profit margin developer

Residual value
Construction costs
Depending on adaptability and building layers

Stuff
Space
Services
Skin
Structure
Site
Construction costs
Depending on building alterations

Source: Mackay 2008
Office to housing conversions

Construction costs

<table>
<thead>
<tr>
<th>High costs, variable</th>
<th>High costs, standard</th>
</tr>
</thead>
<tbody>
<tr>
<td>Structure</td>
<td>Binnenwanden</td>
</tr>
<tr>
<td>Skin</td>
<td>Plafonds</td>
</tr>
<tr>
<td>Services (ducts)</td>
<td>Elektrische installaties</td>
</tr>
<tr>
<td>Project costs</td>
<td>Inbouw</td>
</tr>
<tr>
<td><strong>Low costs, variable</strong></td>
<td><strong>Lage kosten, standaard</strong></td>
</tr>
<tr>
<td>Finishings roof, floors and walls</td>
<td>Schilderwerk, schoonmaak, terreininrichting</td>
</tr>
<tr>
<td>Aanpassen trappen, balustrades etc aan eisen</td>
<td>- “je moet altijd iets doen”</td>
</tr>
<tr>
<td>bouwbesluit</td>
<td></td>
</tr>
</tbody>
</table>
Office to housing conversions

Conversion costs – a broad range

Conversion costs per m² GFA, based on case-studies ex-post

Highest costs found: € 1450,-
Lowest costs found: € 550,-

Differences depending on
- Adaptability
- Quality of finishes
- Process

Source: Djajadiningrat 2013
Development Valuation

Future value

In essence, development valuation merely involves the calculation of what can be achieved for a development once completed and let, less what is costs to create.

Discounted Cash Flow Model

Type of calculation depends on the purpose of the analysis, the available information and phase of development.
NPV

Net present value of possible redevelopments

Selling price at $t = 3$

Market value at $t = 3$
NPV

Net present value of possible redevelopments

Exit value property

Future rent income

Re-development costs

Acquisition costs property

$\text{t = 0}$

$\text{t = 13}$
NPV

Net present value of possible developments

Possible to generate income during the first three years?

- Acquisition costs property
- Future rent income
- Re-development costs
- Temporary use income

Exit value property
Residual calculations

Some critical remarks

- Demands knowledge of different real estate markets, user preferences and architecture
- Demands technical knowledge
- Time consuming
- High uncertainty development costs
- Risk: uncertainty of outcome
Adaptive reuse as real estate management
## Property management framework

### Direct return on investment

<table>
<thead>
<tr>
<th>Fitness for use</th>
<th>High</th>
<th>Low</th>
</tr>
</thead>
<tbody>
<tr>
<td>High</td>
<td>Good, fully leased, attributes align with user preferences</td>
<td>Vacant, but good location and has potential for adaptation/upgrading</td>
</tr>
<tr>
<td>Low</td>
<td>Doing well, but hidden vacancy or functionally obsolete</td>
<td>Vacant, obsolete office location, low building quality</td>
</tr>
</tbody>
</table>
Adaptive reuse

Possible development

Property Management

Prosperous? Adapt

Office location +

Office building +

Niche office sector? Adapt or change management

Not fit for use? Demolish (new build)
An approach to adaptive reuse

Office to housing conversion
Possible development of vacant properties

Convert

Convert or demolish and new-build

Housing building +

Housing location +

Plans for location transformation? Or pioneering possible?
Convert

Not suitable for living?
Demolish (new-build, other function)
Property management

Supporting decision making

- Develop framework to support decision making about building adaptation
- Different options in management are: keep as is (maintain), adapt and upgrade for current use, convert to new use, demolish (and new build)
- The best option defined by market, location and building characteristics
Property management framework

Direct return on investment

Fitness for use

High

Low

Maintain

Adapt for same use

Convert to new use

Demolish (and new build)
Challenge the future

Delft University of Technology

European Real Estate Society conference 27/06/2014

Jeanne Borst
(Borst, Remøy and Koppels 2014)
Successful cases
Adaptation
Schieblok, Rotterdam

An approach to adaptive reuse
Kauwgomballenfabriek
Amsterdam
Adaptation/renovation

Location & building attributes

- Accessible location – bike, public transport, car
- Comfort in use
- Representative interior
- Multi tenant
- Safety of location and rented unit
- Restaurants and cafés nearby or in building
Adaptation/renovation

Facilities attributes

- Wifi
- Small units available
- Flexible lease
- Meeting places
- Shared services
- Community
Case studies

Before conversion
Case studies
After conversion
Puntegale Rotterdam
Puntegale Rotterdam

- Tax office (1948); national listed monument
- Conversion: Architectenbureau De Jong Bokstijn
- Developer conversion: Stadswonen/Kristal
- Not fit for use as office
- Low purchasing price
- Developer saw possibilities for value increase location
- High floors: duplex housing
- Over dimensioned main loadbearing structure
- Listed building: facade and specific elements kept
- No balconies: communal roof terrace
Granida, Eindhoven

- Office GGD (1955)
- Design conversion: Ton Kandelaars Architecten
- Developer conversion: Van Straten en Woonveste
- Not a listed building, though found important for history of Eindhoven
- Low purchasing price
- High unexpected construction costs – anticipated upon in risk calculation
- Structure technically obsolete: box-in-box construction for apartments, new cladding of main structure
- Drawings original building incorrect: different measures and materials
Westerlaantoren, Rotterdam
Westerlaantoren, Rotterdam

- Office VOPAK (1959)
- Design conversion: Ector Hoogstad Architects
- Developer conversion: Maarsen Groep
- Not fit for use in current state, technically and functionally outdated
- Building was already property of the developer
- Location favourable for housing
- Robust main structure
- 5 floors added
- Structural advisory firm of original building also advised conversion
Driving urban regeneration

Mediacentrale Groningen

Built in 1931, adapted in 1998
Original function: Energy central
New function: offices and light industry

- Municipality was taking the initiative
- Developer was responsible for the plan and concept
- New main tenant taking part in development (RTV Noord)
- Difficulties in attracting more tenants: lack of facilities
Driving urban regeneration

Caballerofabriek Den Haag

Built in 1953, adapted in 2001
Original function: Caballero tobacco factory
New function: offices and light industry

- Municipality was taking the initiative and responsible for development
- Caballero as driver for regeneration
- No private parties involved
- Building adaptation successful – regeneration slow
## Office to residential conversions

### Favourable location and building criteria

<table>
<thead>
<tr>
<th>Location</th>
<th>Functional</th>
<th>Technical</th>
<th>Aesthetic</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Multifunctional location or housing location</td>
<td>- Multifunctional location or housing location</td>
<td>- Good technical state</td>
<td>- No office appearance</td>
</tr>
<tr>
<td>- No noise nuisance / good air quality</td>
<td>- Big buildings</td>
<td>- Reuse of elevators (shafts) and stairs</td>
<td>- Spatial quality</td>
</tr>
<tr>
<td>- Multifunctional location or housing location</td>
<td>- Extendable buildings</td>
<td>- Possibility to add stairs</td>
<td>- Daylight admittance</td>
</tr>
<tr>
<td>- No noise nuisance / good air quality</td>
<td>- Adaptable facade, operable windows</td>
<td>- Good technical state</td>
<td>- Daylight admittance</td>
</tr>
</tbody>
</table>
An approach to Adaptive Reuse

Summing up

- Adaptation drivers
- Value in use and obsolescence
- 4 options
- Defining the adaptive reuse potential
- Adaptive reuse as real estate management
- Successful cases
An approach to Adaptive Reuse
Empirical evidence from the Dutch practice

Hilde Remøy – h.t.remoy@tudelft.nl