

The Roles of Developer in directing good Environmental Performance in the Construction Industry

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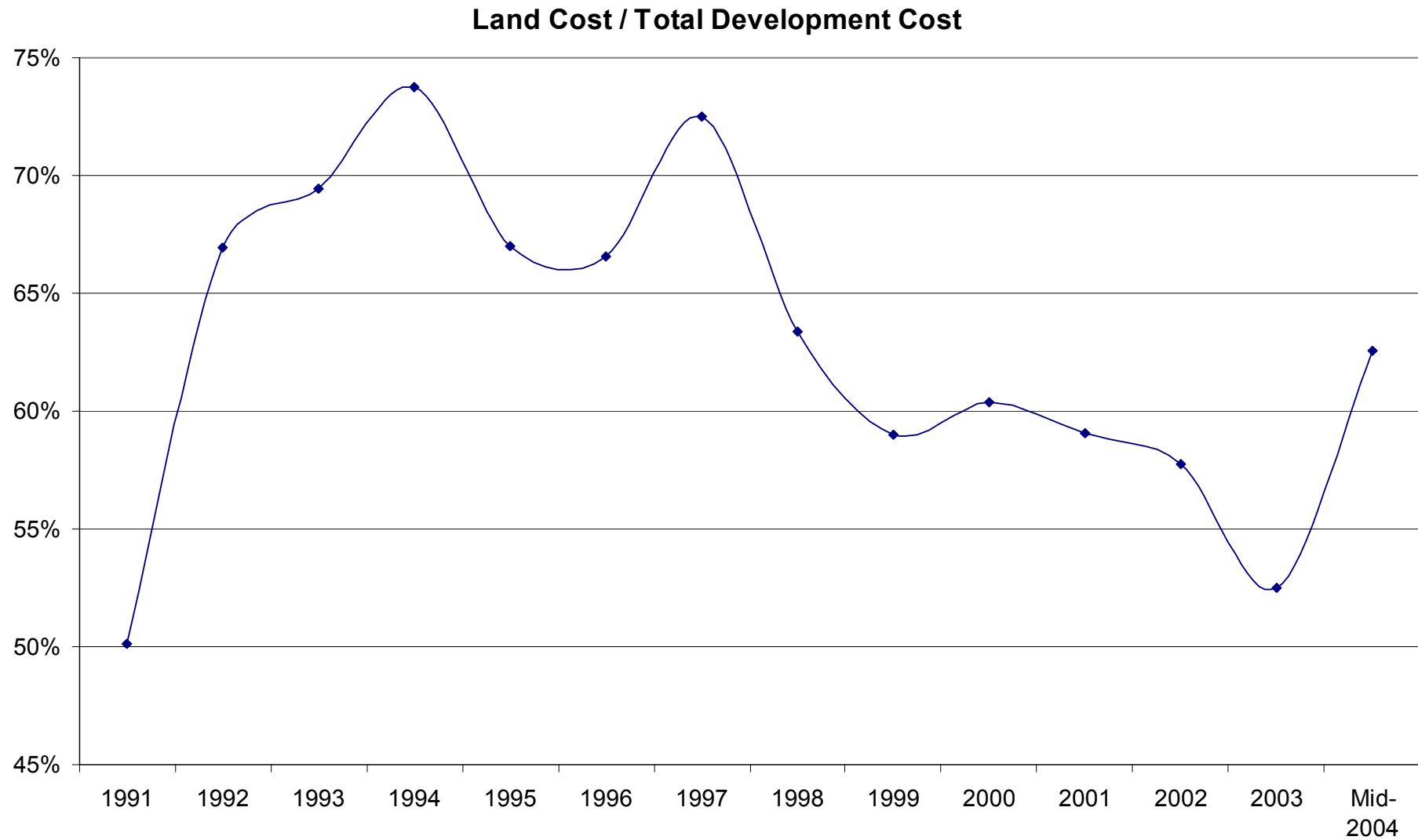
DEVELOPER'S ARE THE “DRIVERS”

“ Socially responsible business people need to ask some tough questions about their activities. Do customers really need their products, or just their functions or services? Might these be “excessities” or necessities? Are they creating genuine value for society?”

T.N. Gladwin, Prof. Of Sustainable Enterprise at University of Michigan Business School

Despite the pressures and problems we are facing at a global, societal, economic and personal level, there are seldom new solutions that radically depart from old ways of doing things. Instead of bold and creative thinking, we edge backwards in incremental steps more relevant to a past age.

Hong Kong's Environmental Dilemma



Corporate Social Responsibility

**Five Corporate Values: Integrity; Commercial Responsibility;
Commitment; Innovation & Creativity and Social Responsibility**

At Swire, it expressly commits us to:

- Ensuring the safety and well-being of employees, customers and others with whom we interact***
- Protect the environment from harm***

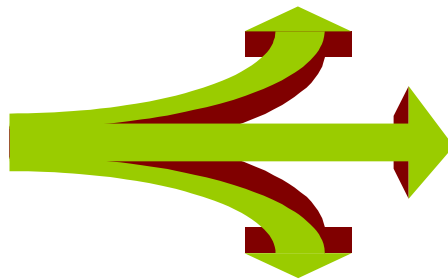
Some examples of Environmental Management in Swire Projects

COVERS:

NEW CONSTRUCTION

RENOVATION &

DEMOLITION



Encompasses:

- *Planning and Design Development*
- *On-site Management*
- *Performance Measurement*

NEW CONSTRUCTION

CAMBRIDGE HOUSE ISLAND EAST



THREE PACIFIC PLACE Business – Your Way



The Orchards: 逸樺園



NEW CONSTRUCTION

Planning and Design

Building Services Prefabrication

CAMBRIDGE HOUSE
ISLAND EAST

THREE PACIFIC PLACE
Business – Your Way



Precast Concrete Elements

CAMBRIDGE HOUSE
ISLAND EAST

The **OYchards** 逸樺園



NEW CONSTRUCTION

On-site Management

Waste Management & Environmental Control

CAMBRIDGE HOUSE
ISLAND EAST

- Overhead Nozzles for Dust Suppression
- Construction Waste Recycling Plan



THREE PACIFIC PLACE
Business – Your Way

- Waste Management Plan
- Recycle and reuse C&D waste
- Regular site audit
- Waste management in Contractor Report



The **Orchards**: 逸樺園

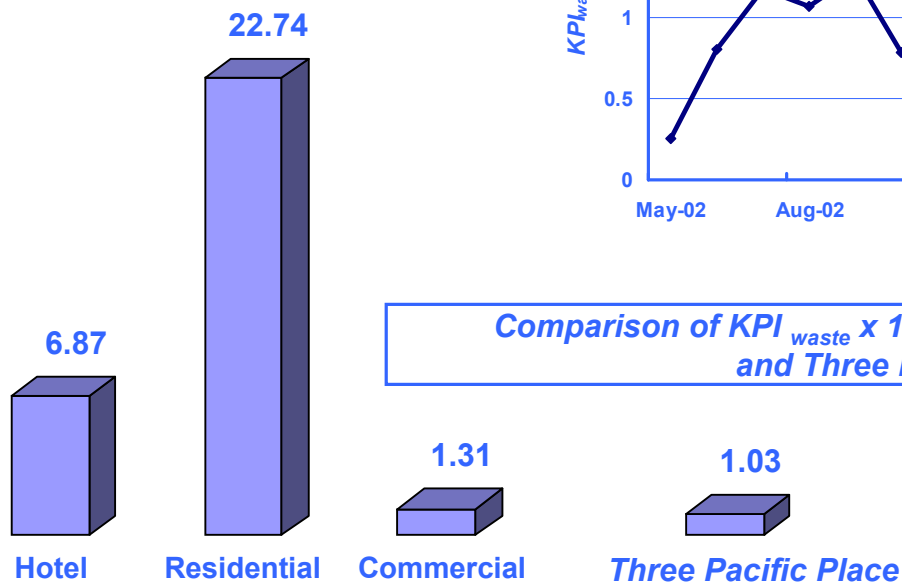
- Wheel Washing
- Wastewater Treatment Tank
- Chemical Waste Storage Area



NEW CONSTRUCTION

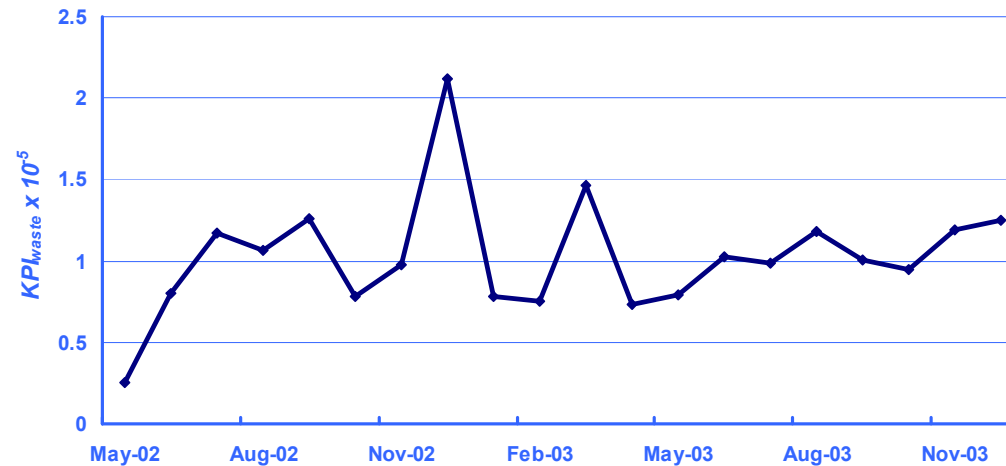
Performance Measurement – waste generation in Three Pacific Place

$KPI_{waste} = \text{Volume of C\&D Waste Disposed} / \text{Project Expenditure}$
(m³ of C&D Waste per unit HKD)



Sources: Hip Hing and Gammon Construction

Key Performance Indicators (KPIs) for C&D Waste Generation of Three Pacific Place



Source: Gammon Construction

The lower the KPI_{waste} is, the better is the environmental performance regarding C&D waste generation

RENOVATION

Parkside

SERVICED APARTMENTS



RENOVATION

Planning and Design

Waste Reduction Principles MUST be established from Day 1

- Recycled existing loose furniture, fixtures and equipment
- Reused existing teakwood flooring
- Recycled all doors
- Use of proprietary reusable protection system
- Use of pre-cast partition wall panels
- Redesigned corridor carpet to reduce off-cuts
- Reused existing marble

RENOVATION

Planning and Design

Recycled existing loose furniture, appliances and fittings

Furniture items and fittings (kitchen appliances, TV sets, sanitary fittings and doors)
handed over to Mok & Lockwood Joint Venture to recycle :

- **40%** to a 4-star services apartment located at Port Dickson, a popular beach resort in **Malaysia**.
- **30%** to a group of timeshare holiday apartments in 3 resort locations in **West Malaysia**.
- **20%** to an suburban **Melbourne** Motor Inn.
- **10%** was retailed to various individuals in **Kuala Lumpur**.

RENOVATION

Planning and Design

*Teakwood flooring
found under old carpet*



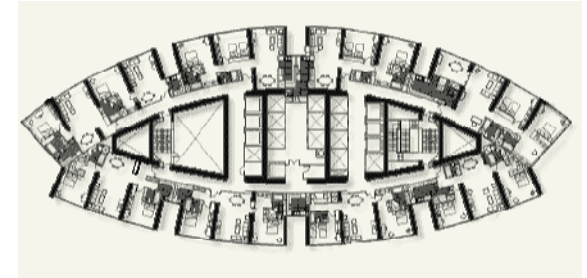
Reconditioned teakwood floor



RENOVATION

Planning and Design

Re-design corridor carpets to eliminate wastage



Machine Tufted Carpet (per floor)

Pile Weight	Unit Rate HK\$/M ²	Carpet Consumed	Wastage Ratio	Amount Spent (HK\$)	Est Min Life span	Avg Cost per annum
38 oz.wt.	255.00	116.50 M ²	37%	29,705.00	5 years (joints)	5,941.50

Hand Tufted Carpet (per floor)

Pile Weight	Unit Rate HK\$/M ²	Carpet Consumed	Wastage Ratio	Amount Spent (HK\$)	Est Min Life span	Avg Cost per annum
56 oz.wt.	452.00	85.00 M ²	0%	38,420.00	7 years (no joints)	5,488.57

RENOVATION

On-site Management

Consists of:

- **A Waste Management Plan and Report**
- **Mandatory Material Sorting/Recycle and Reuse of C&D Waste**
- **Identifying Reusable Items**
- **Conducting Regular Site Audit**

RENOVATION

On-site Management

Mandatory material Sorting/Recycle and Reuse of C&D Waste

Recycled Items :

Copper Piping, Light Troughs, AHU/PAU Coils, Fire Dampers, Fan Coil Units



DEMOLITION

DEMOLITION 16 Westlands Road

Aik San Factory Building
(1972), 472,956 ft²

Melbourne Industrial Building
(1977), 359,731 ft²



DEMOLITION

Demolition Method

- *Concrete Crusher by Biting Action*
- Minimize dust generation and reduce the use of spraying water
- Minimize noise generation



Conventional Approach

Concrete Breaker by Percussion Action



DEMOLITION

Material Sorting and Recycling



Sorted Aluminum
Air Duct



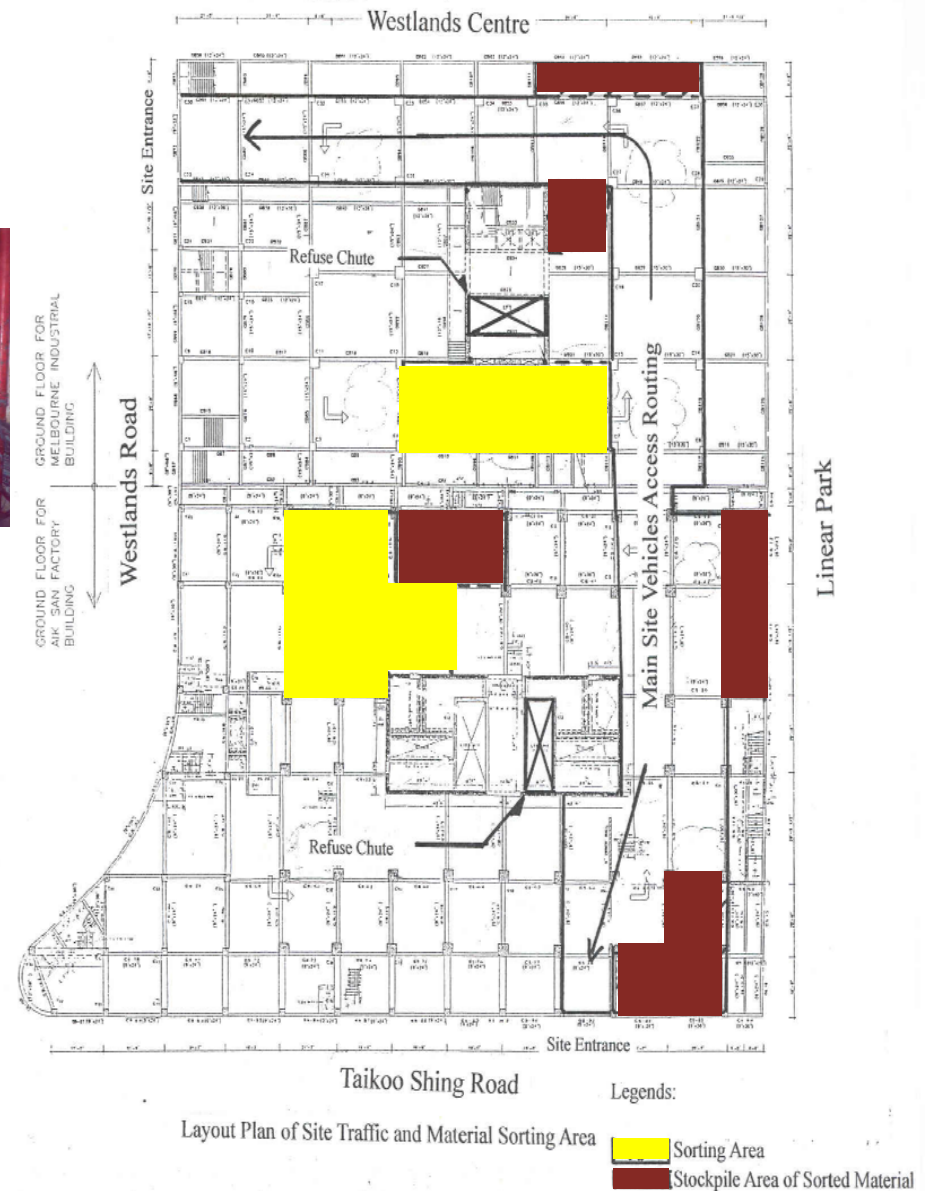
Sorted Lighting
Box



Recyclable Steel
Material



Recyclable
Concrete Debris



DEMOLITION

Construction & Demolition Material Recycling Facilities

TUEN MUN
AREA 38



Primary Crusher (Jaw Crusher)
初級碎石機 (顎形碎石機)



Secondary Crusher (Cone Crusher)
二級碎石機 (錐形碎石機)



Barge
Launching



Barging Point
Operation

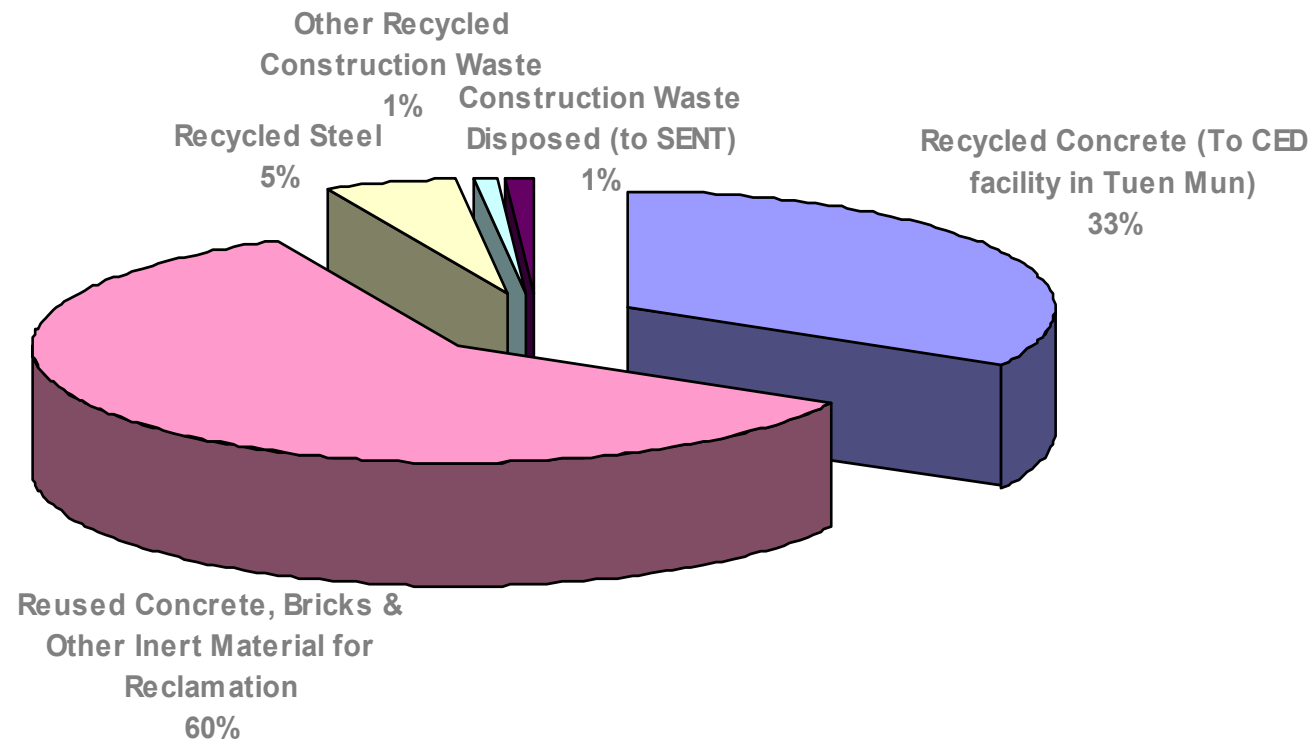


Learn more...
<http://www.ced.gov.hk>

DEMOLITION

Performance Measurement

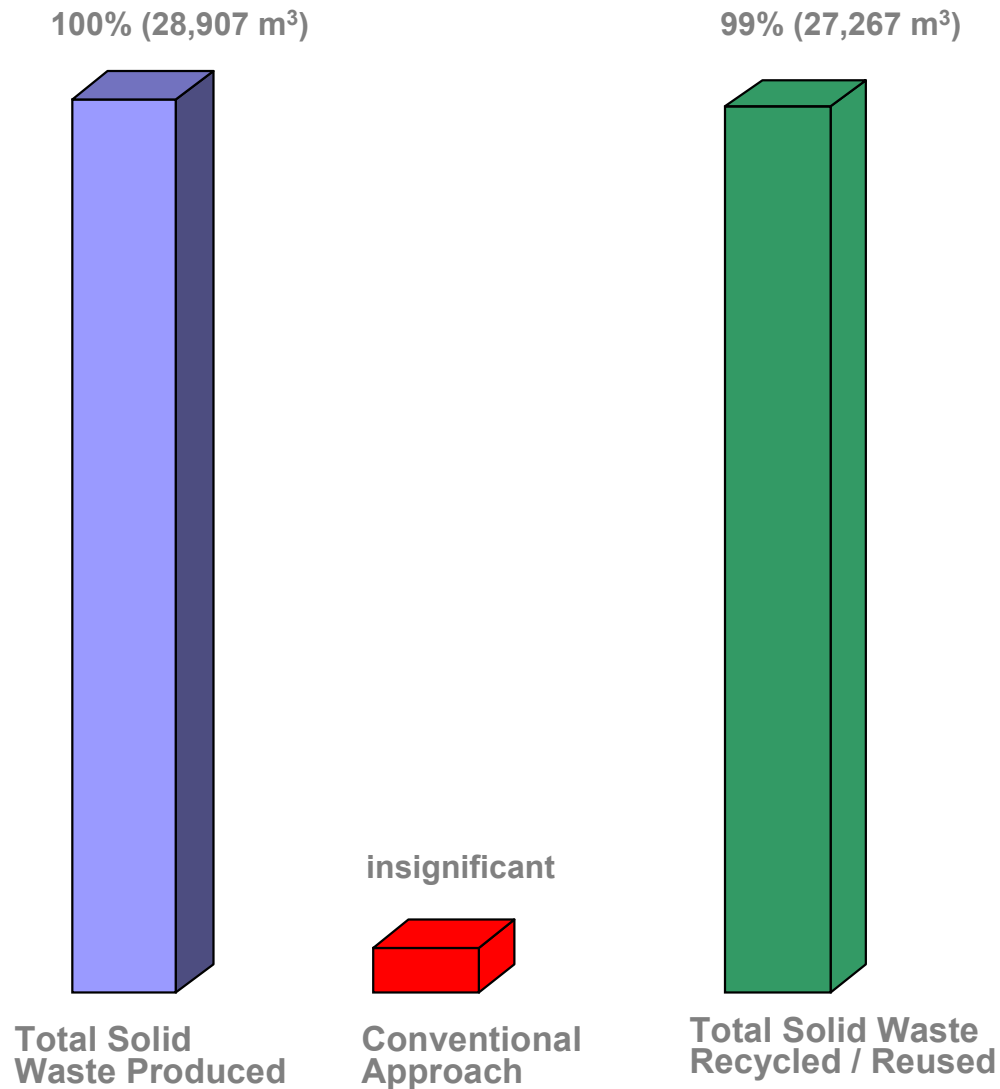
Constituents of the Recycled Materials



DEMOLITION

Performance Measurement

*Percentage of Solid Waste
Recycled / Reused*

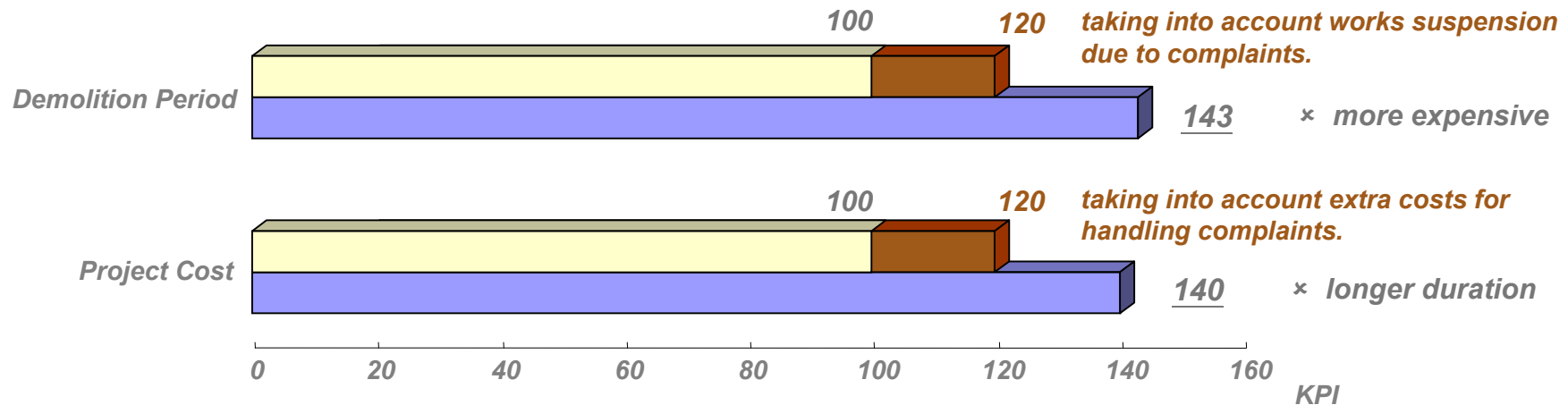


DEMOLITION

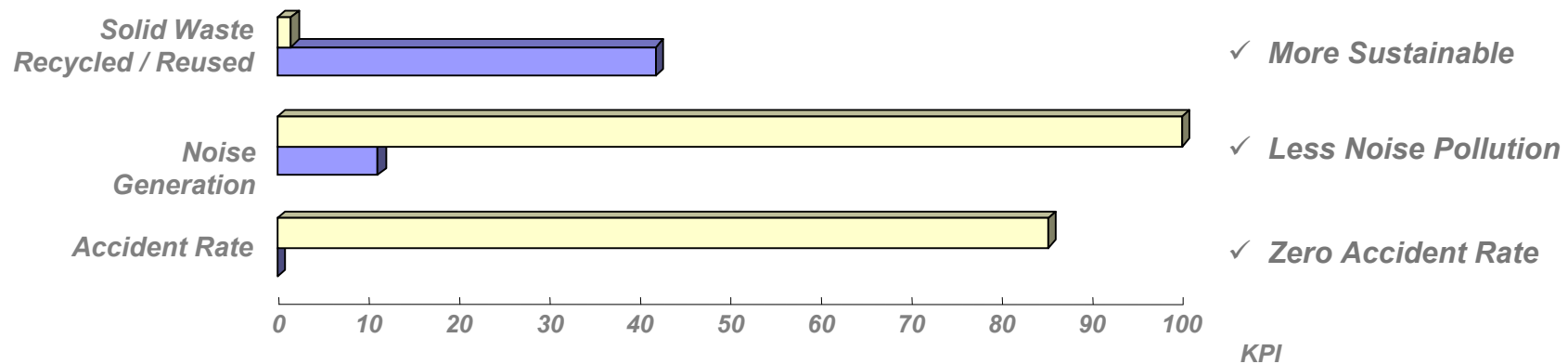
Additional Cost and Time Vs. Environmental Gains

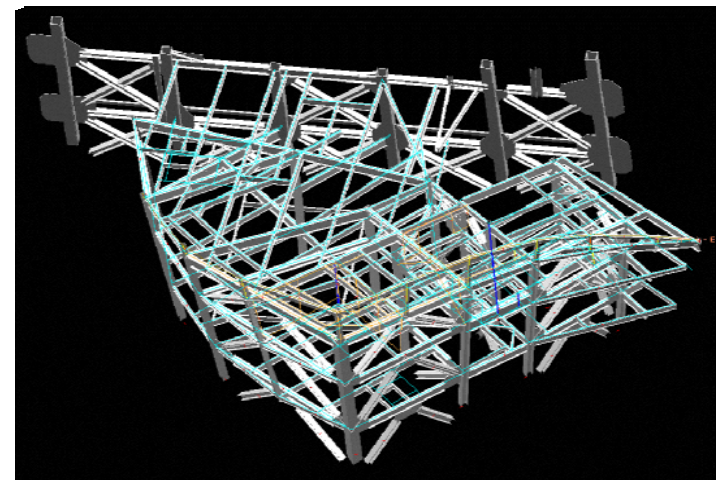
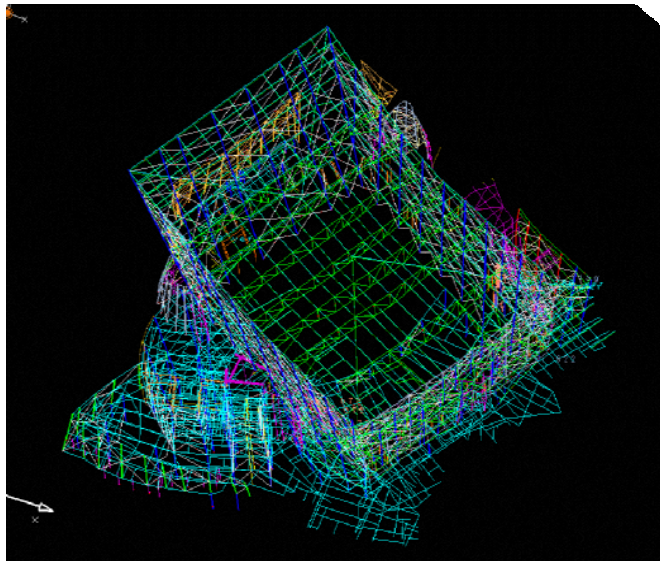
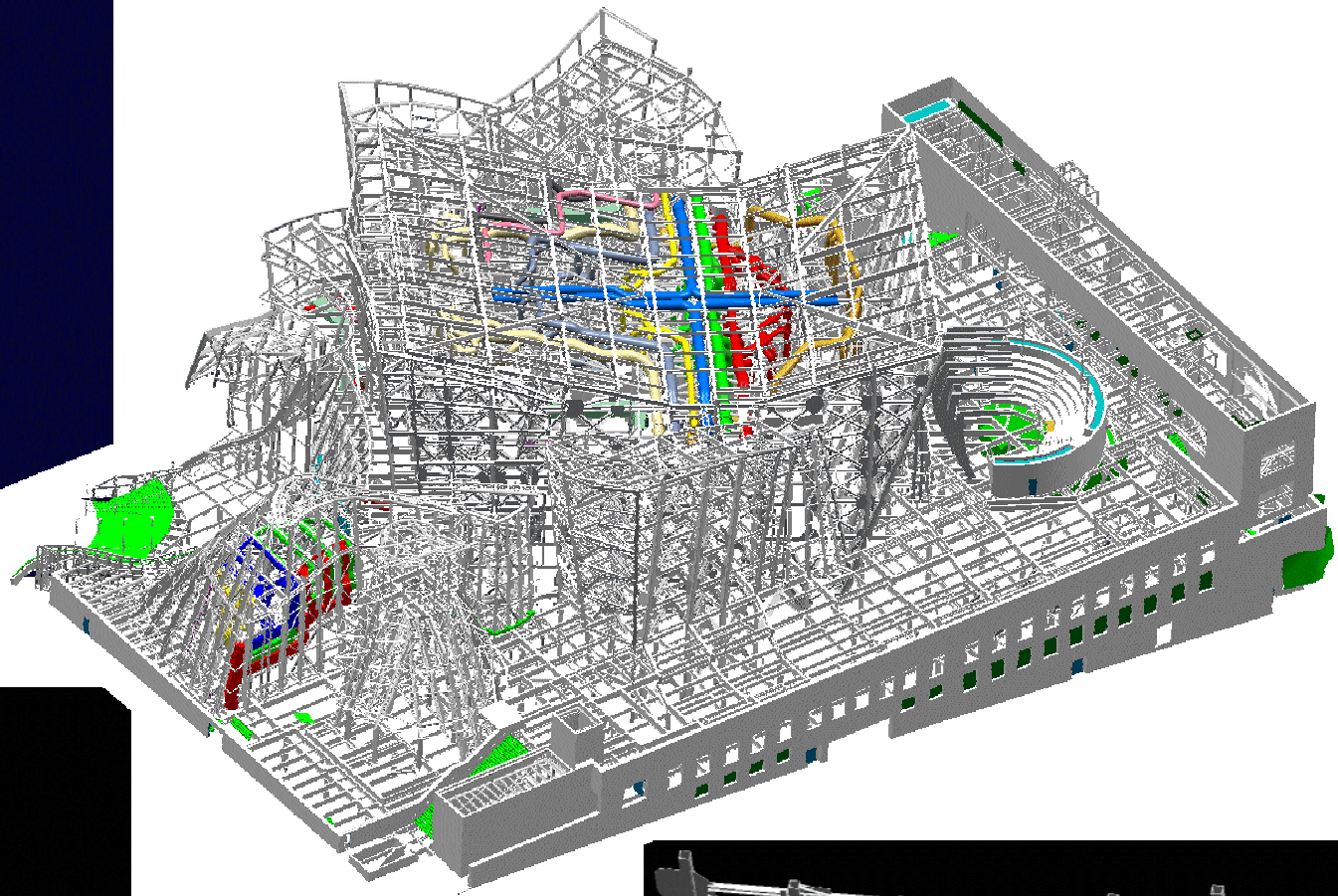
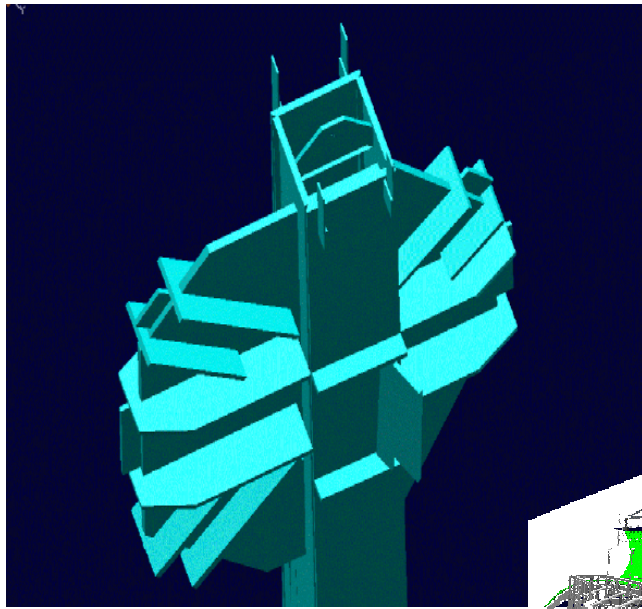
Key Performance Indicators on Project Cost and Period

□ Conventional Approach
■ Non-percussive Method



Key Performance Indicators on Environmental Gains





2003, Walt Disney Concert Hall, Los Angeles

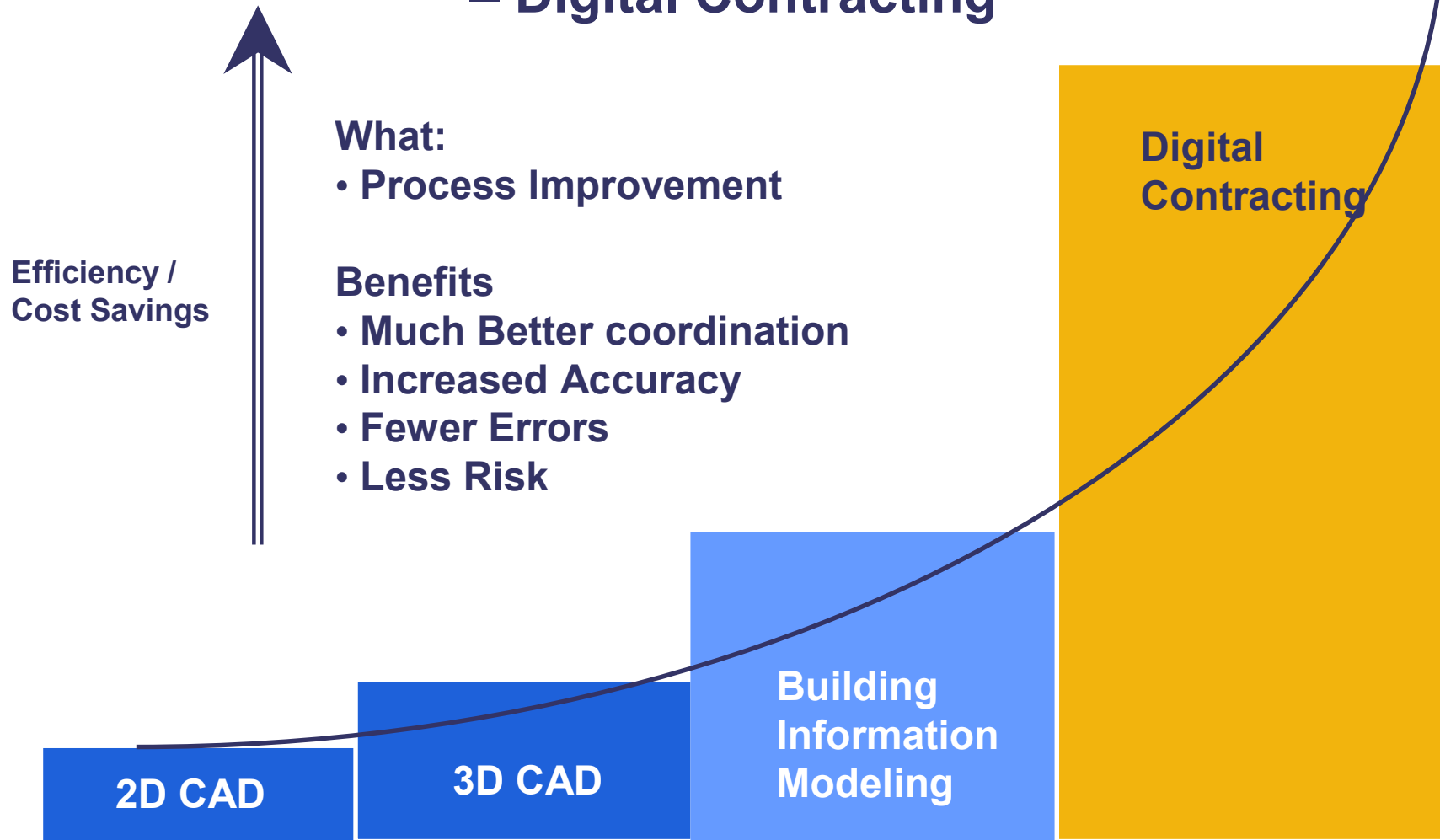


Direct 3D Input
Rapid Prototyping
Catia V3 Stone Modeling
CAD/CAM Fabrication

The Global Building Industry

20%+Waste

Technology Evolution – Digital Contracting



Harnessing Digital Technology

- Work less but smarter
- Deconstruct design
- Get back to basics
- Work down the supply chain
- Challenge the old ways
- Innovate and change
- Focus on people



Courtesy of Tecton Limited



Building on Green Foundations

Environmental, Health & Safety Report 2003



www.swireproperties.com

Why the Developer must be responsible?

“The transformation of the human consciousness (and the resulting system) is no longer a luxury but a necessity if human kind is not to destroy itself.

At present the dysfunction of the old consciousness and the arising of the new are both accelerating.”

- Eckhart Tolle. “Stillness Speaks”

These were some of Swire’s contribution to a greener

