

# ECOLOGICAL SANITATION IN URBAN SOUTH AFRICA: SOCIO-CULTURAL, DESIGN AND OPERATIONAL CHALLENGES OF UDD TOILETS AND THE IMPACT ON USERS' PERCEPTIONS

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# Introduction and background

- Waterborne sanitation is still the predominant system in South Africa's urban areas despite efforts to introduce alternatives
  - SA is a water scarce country
  - Rapidly urbanising population
  - Greening the living environment
- Medium Density Mixed Housing (MDMH) typology is advocated in the Dept. of Human Settlements' comprehensive plan Called Breaking New Ground (BNG)
  - Address spatial restructuring of S African cities
  - Encourages greater mix, private space and higher density

# Introduction and background (cont.)

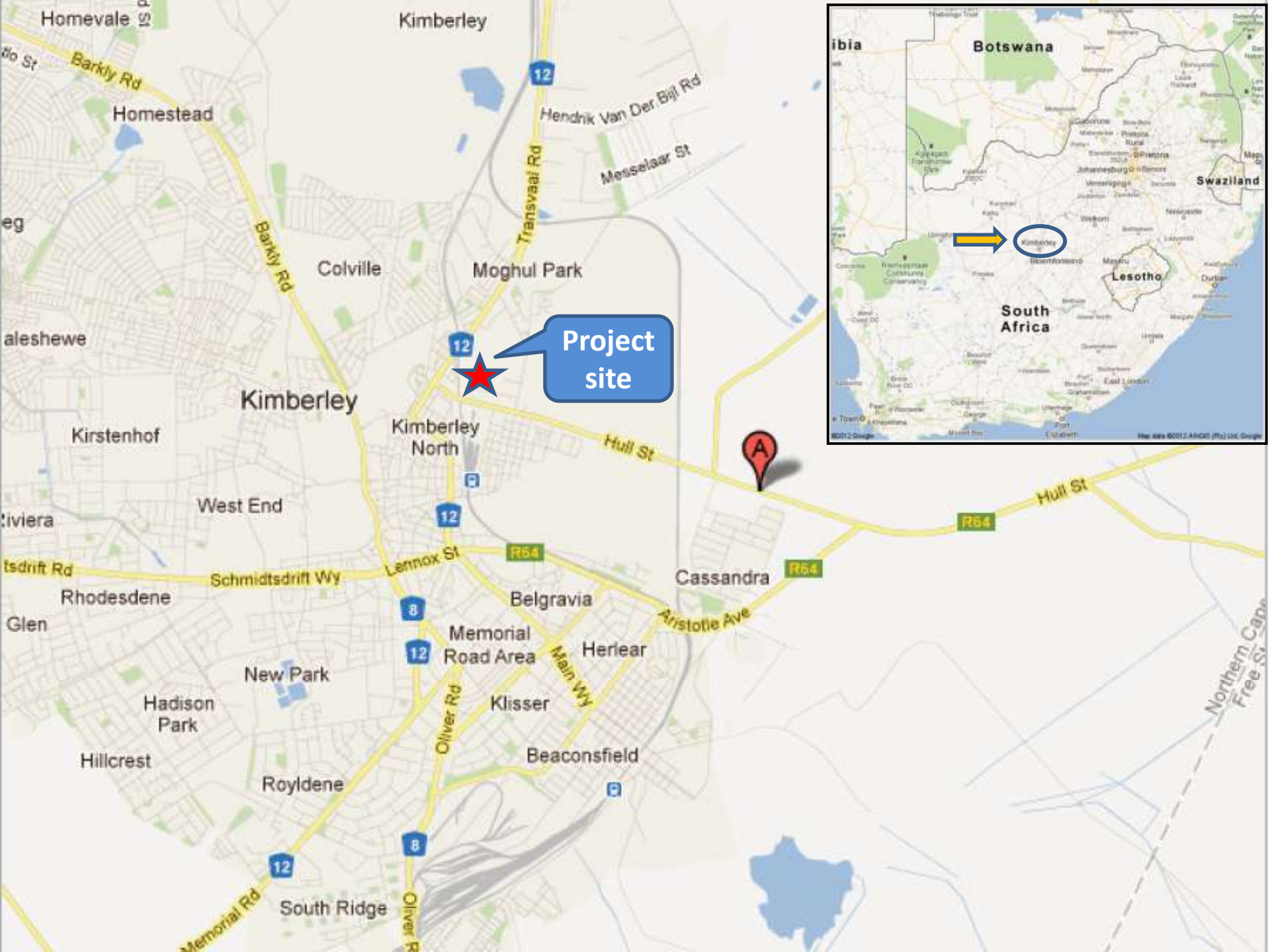
- Features of MDMH in South Africa
  - Housing with a minimum of 50 du/ha and a maximum of 125 du/ha.
  - Ability to accommodate a large number of people in a small space with ease access to services and facilities.
  - Not more than four storeys

▪

# Introduction and background (cont.)

## Hull Street Project

- This MDMH is initiated and co-funded by the Swedish International Development Co-operation (SIDA) in collaboration with the NC Dept. of Housing in 1999
- It was developed with the purpose of it becoming a sustainable human community
- It has 114 units – two and three bedrooms single and double storey
- All units fitted with showers and UDDT
- Managed by the Sol Plaatje Housing Company

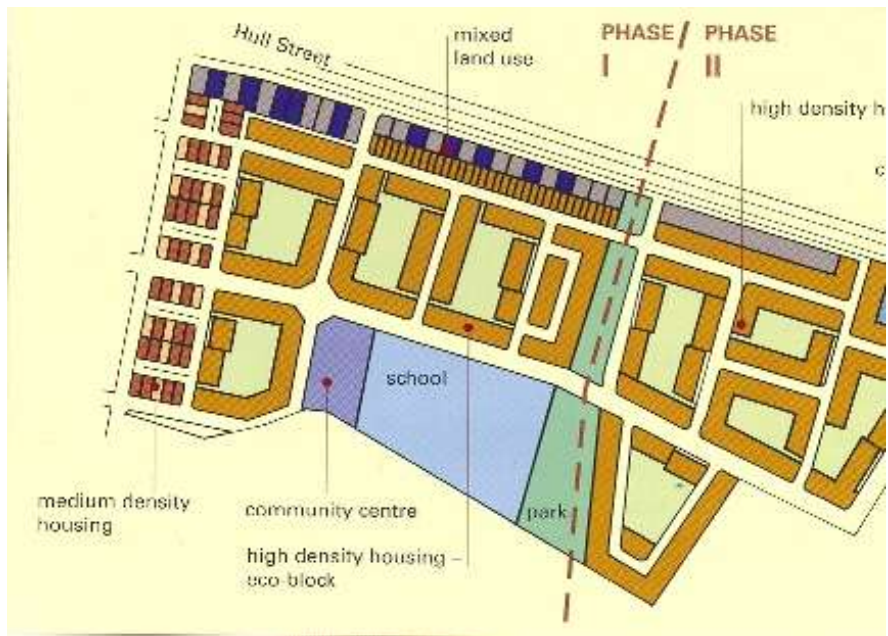


Project site

A







# Introduction and background (cont.)

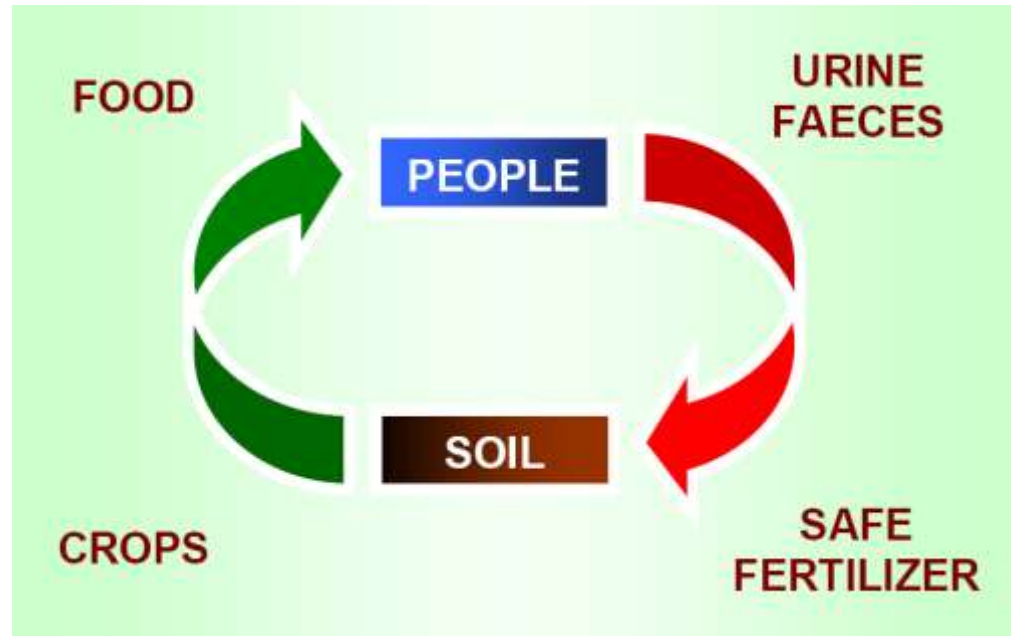
## The urine diversion dry (UDDT) in Hull Street

- Key objectives of the Hull Street:
  - to provide housing for families with low & medium incomes
  - to build houses with sustainable sanitation with low water use,
  - to create new urban planning that promotes a sense of community,



# Introduction and background (cont.)

- to provide housing for mixed ethnicities in order to work towards a more integrated society
- Tenants have no choice on the sanitation system
- Training on Operation & Maintenance (O & M) of the system was provided to potential tenants
- Technology was not accepted by users – ‘inferior, backward, bucket system’
- System now to be converted into waterborne system





# Introduction and background

## Aim of the study

To explore the socio-cultural perceptions of the users of the UDDTs installed in Hull Street (MDMH)

# Research methods

- The study was qualitative in nature
- The research used a case study design.
- The sample size comprised 16 users (13 residents and three employees).
- The sample selected by a purposive sampling method, also known as judgemental, subjective or selective.
- Semi-structured interviews were conducted using an open-ended questionnaire.
- Pilot study.



# Findings and discussion

- The overall results revealed a high degree of dissatisfaction regarding the use of the UDDTs, which emanates from poor design of the toilet facility.
- The findings of the study categorised into four themes:
  - I. Design, use and functionality
  - II. Operation and maintenance
  - III. Users' perceptions and attitudes
  - IV. Socio-cultural influences/ impact

# Findings and discussion (I)

## Design, use and functionality

- Toilet reportedly difficult to use as design requires one to aim carefully
- Design also required that proper use be explained to visitors causing embarrassment
- Toilet was also perceived to be a health risk for women particularly when wind blows
- Other perceptions: unhygienic, unhealthy,
- Also reported: uncomfortable sitting position, unpleasant odours, relatively high O & M costs

# Findings and discussion (II)

## Operation and maintenance

- Current measures in place (fan, lime to cover faeces) to address odour appear to be inadequate
- Consequently, tenants incur high O & M costs
  - Spend lot of money on cleaning detergents and disinfectants
  - Pay a fee for extra collection service and running an extraction fan consumes lot of electricity

# Findings and discussion (III)

## Users' perceptions and attitudes

- Majority of respondents did not prefer the UDD toilet and would not recommend it to other people
  - Perceived to be unhygienic, smelly, unhealthy, inferior standard ('bucket system')
- They preferred a flush toilet - 'right toilet'
- Most participants did not use nutrients in human excreta in their gardens, considered as waste

# Findings and discussion (IV)

## Socio-cultural influences/impact

- Operation of the toilet in conflict with the culture of Muslim users.
- Gender bias in terms of cleaning the toilet – done by females.



# Conclusion

- High degree of dissatisfaction regarding the use of the UDD toilet:
  - smelly, unhygienic (causing infections), unhealthy, of sub-standard design (bucket system/toilet), and uncomfortable to use.

# Recommendations

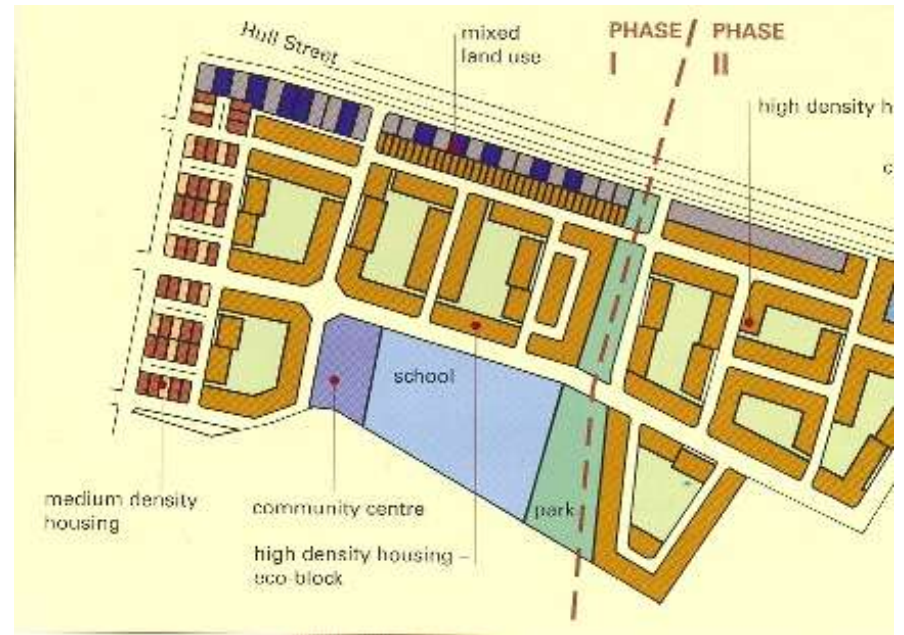
- Planning is political.
- An integrative approach to housing and UDD sanitation supply is recommended, where both fields are viewed as equally important issues in delivery of sustainable human settlements.
- SA as a water-scarce country, a need for government to invest in educating the general public on the wider benefits of the UDD sanitation technology

# Recommendations (cont.)

- It is necessary to ensure that potential users are thoroughly engaged throughout the process in order to be well informed about the UDD sanitation system and future projects
- The UDDTs need to be well designed and convenient to use in order to enhance the acceptance level of the users. Appropriate design, coupled with a lack of or very little smell of faeces and urine is likely to contribute towards the rate of acceptability of UDD sanitation arrangements.

# Recommendations (cont.)

- Toilet seat to be better designed for ease use by both children and adults
- The odour and wind issues need to be resolved through better design
- The toilet to be aesthetically pleasing in its interior design.
- Access to the toilet shaft/waste container at the back of the building





**THANK YOU**