



CLIFFDALE /
KEYSTONE /

HAMMERSDALE

N3

R103

HILLCREST

M13

PINE TOWN

WESTMEAD

KASSIER ROAD

SHONGWENI VALLEY

R103

Marlborough Rd

M165 Rd

Stuart Rd

Stuart Rd

M155 Rd

M189 Rd

Inanda Rd

Bridle Rd

M158 Route

M159 Route

Old Richmond Rd

Hanselman Hwy

Main Rd

Stella Rd

Higgison Hwy















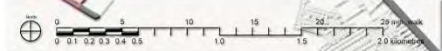
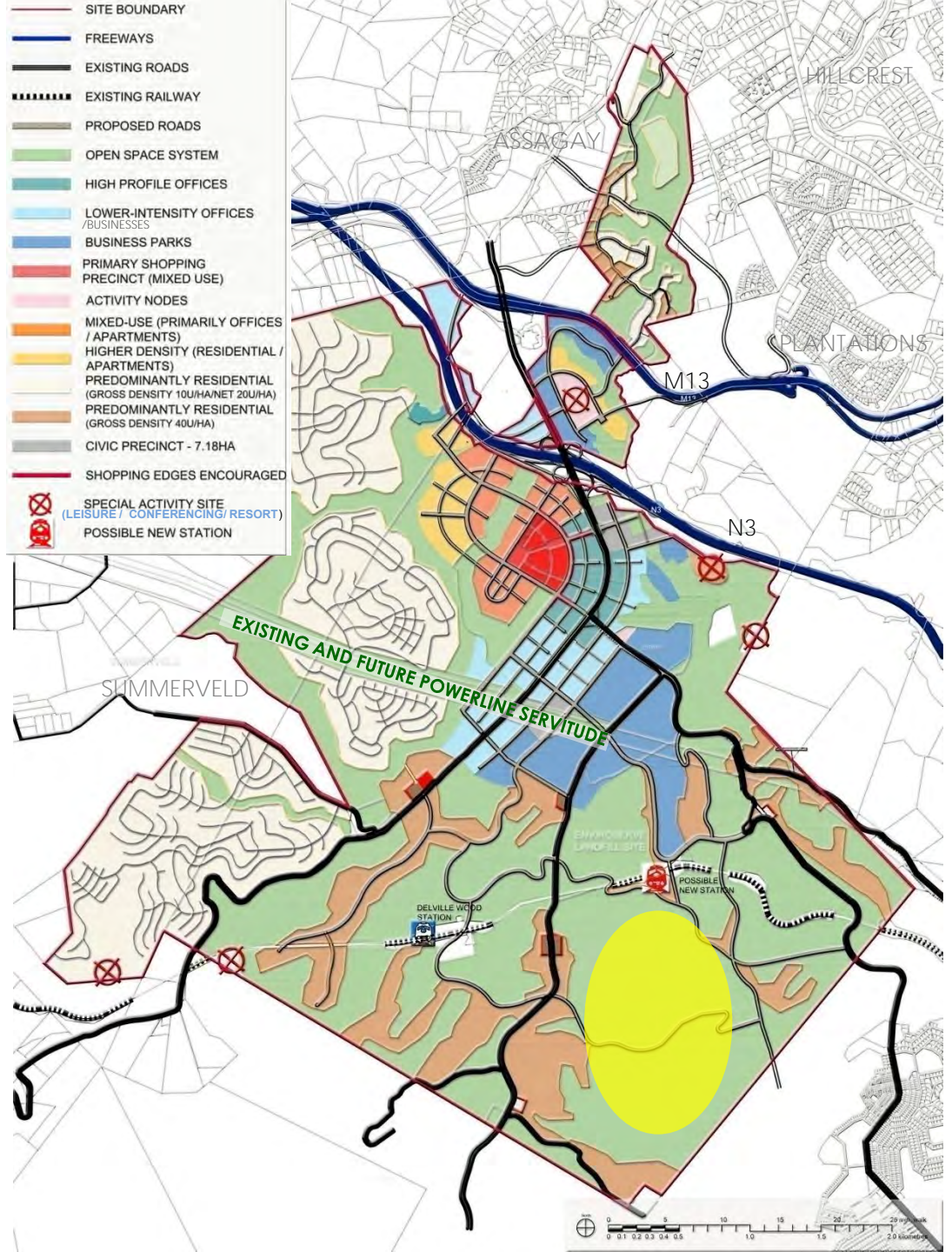


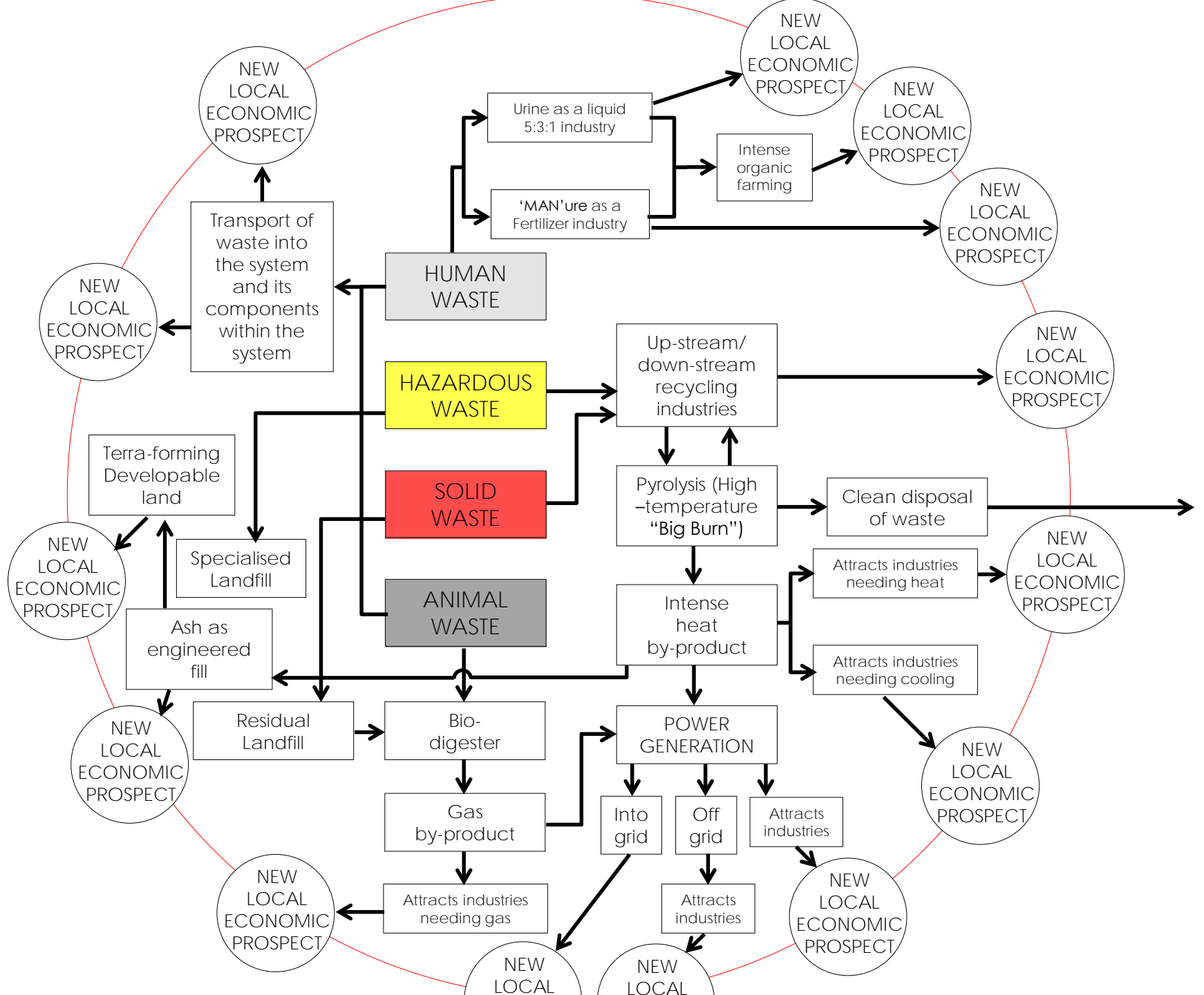




ACTIVITY PATTERN

-  SITE BOUNDARY
-  FREEWAYS
-  EXISTING ROADS
-  EXISTING RAILWAY
-  PROPOSED ROADS
-  OPEN SPACE SYSTEM
-  HIGH PROFILE OFFICES
-  LOWER-INTENSITY OFFICES / BUSINESSES
-  BUSINESS PARKS
-  PRIMARY SHOPPING PRECINCT (MIXED USE)
-  ACTIVITY NODES
-  MIXED-USE (PRIMARYLY OFFICES / APARTMENTS)
-  HIGHER DENSITY (RESIDENTIAL / APARTMENTS)
-  PREDOMINANTLY RESIDENTIAL (GROSS DENSITY 10U/HA/NET 20U/HA)
-  PREDOMINANTLY RESIDENTIAL (GROSS DENSITY 40U/HA)
-  CIVIC PRECINCT - 7.18HA
-  SHOPPING EDGES ENCOURAGED
-  SPECIAL ACTIVITY SITE (LEISURE / CONFERENCEING/ RESORT)
-  POSSIBLE NEW STATION



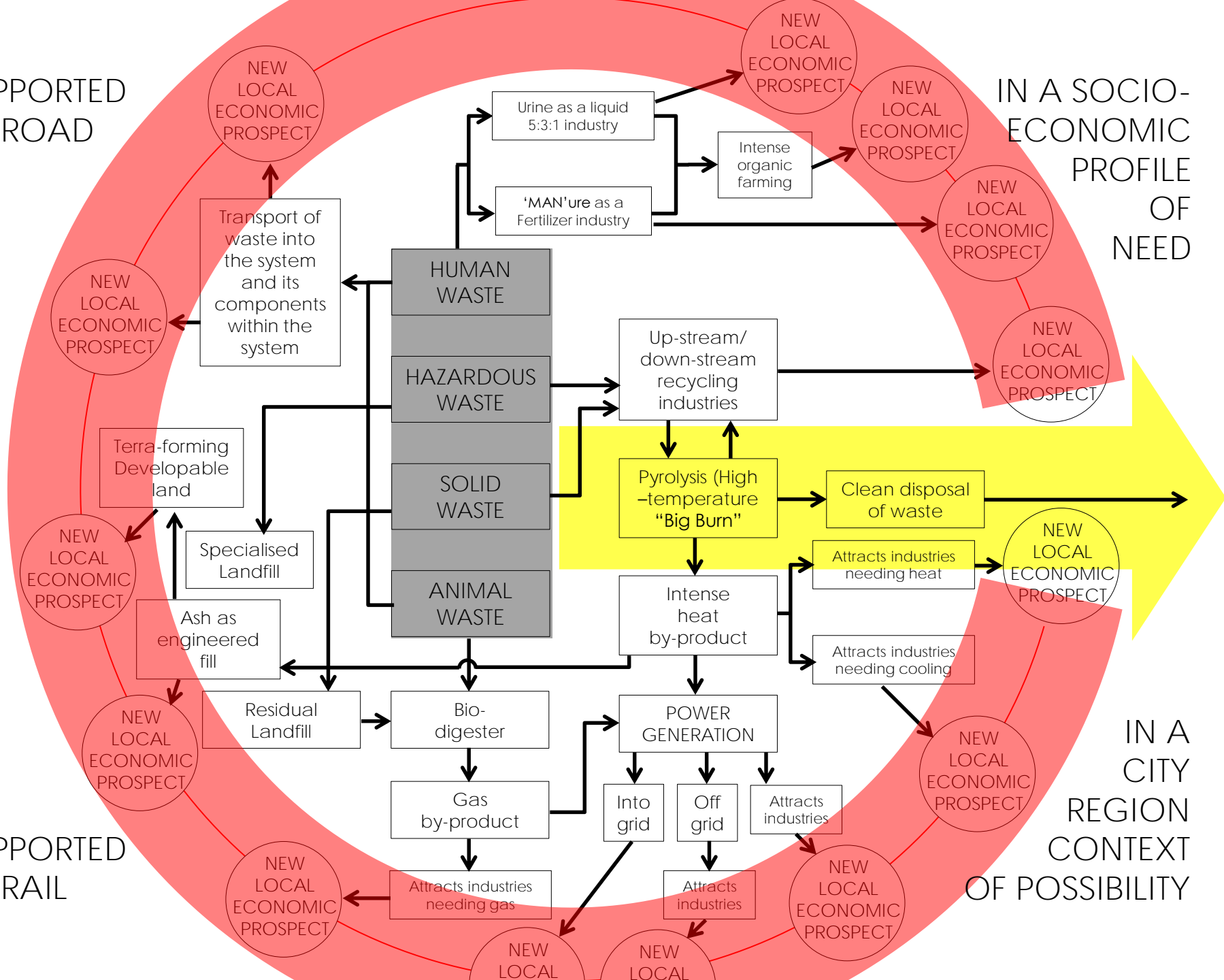


SUPPORTED BY ROAD

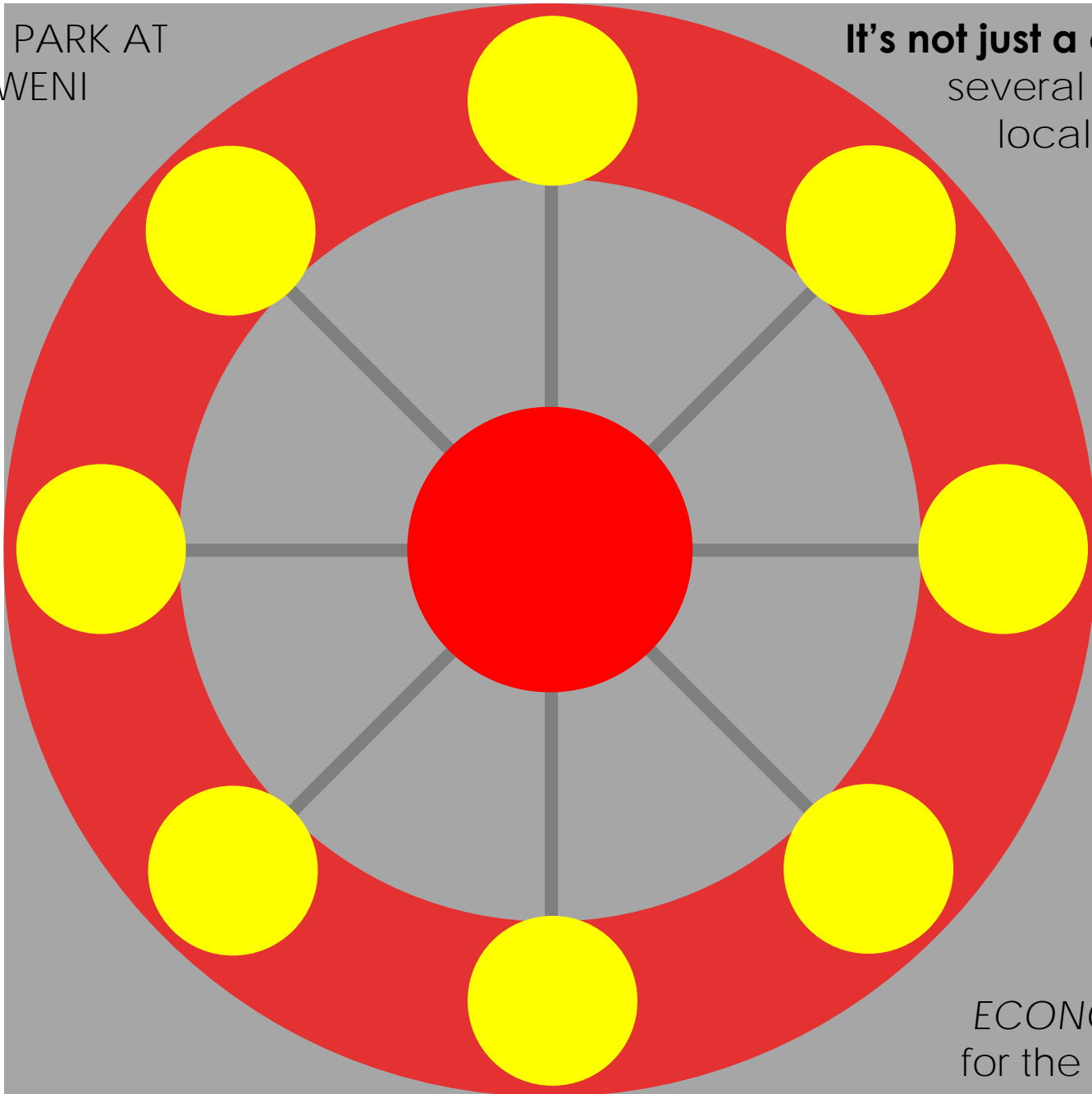
IN A SOCIO-ECONOMIC PROFILE OF NEED

SUPPORTED BY RAIL

IN A CITY REGION CONTEXT OF POSSIBILITY



THE WASTE PARK AT
NTSHONGWENI



It's not just a catalyst for
several new bits of
local economic
prospect...

It's a
whole new
ECONOMIC BASE
for the Outer West

- social fabric
- mobility
- energy
- water & sanitation
- ecology
- development corporation



- no poverty
- zero hunger
- good health & wellbeing
- quality education
- gender equality
- clean water & sanitation
- affordable & clean energy
- decent work & economic growth
- industry, innovation & infrastructure
- reduced inequalities
- sustainable cities & communities
- responsible consumption & production
- climate action
- life below water
- life on land
- peace, justice & strong institutions
- partnership for the goals

sustainable development goals

Existing Paradigms

Sustainability and Innovation (S&I)

SHADES OF GREEN

Business as Usual (BAU)

Best Practice (BP)

Leading Edge (LE)

Bleeding Edge (BE)

Mobility

Energy

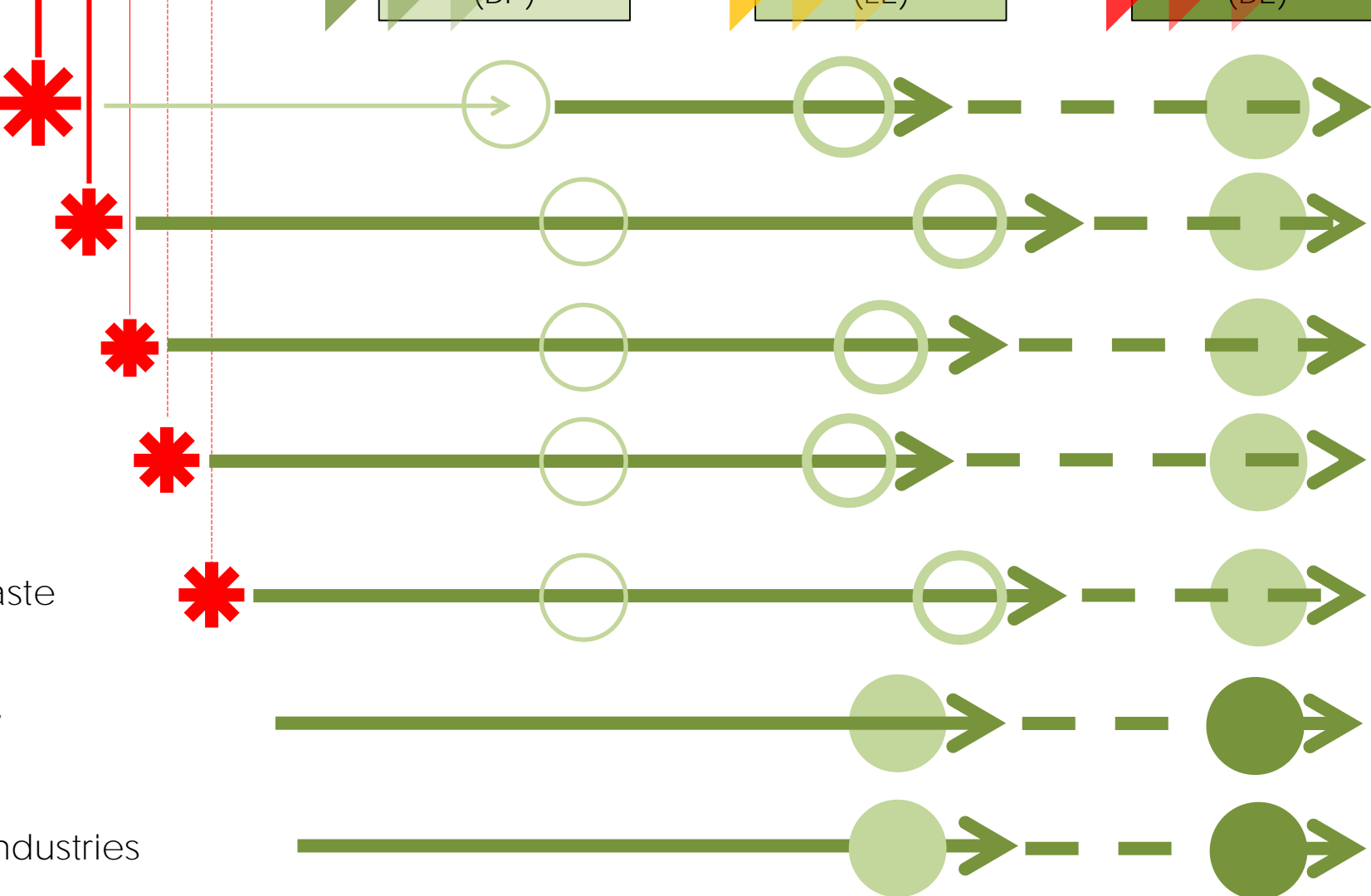
Water

Sewer

Solid waste

Ecology

Green industries



business as usual

- **mobility:** traffic generated from the development of the balance of the urban core triggers a further upgrade of Kassier Road with additional lanes and the construction of the N3/ Kassier Road interchange with a capital cost, in addition to the shopping centre requirements, of R144m, the completion of this additional infrastructure would be sales driven
- the full development of the urban core triggers the following road upgrades:
- further upgrade of Kassier Road R103 to N3, 2+2 lanes (R 80 million)
- Kassier Rd / N3 interchange: bridge over the M13 4+3 lanes + bridge upgrade + access loop (R 64 million)

sustainability & innovation

- mostly unchanged, however the introduction of a sustainable public transport system and central parking structures would reduce the traffic demand both on the bulk (potential saving of R16m) and internal road networks respectively. The parking structures costs and revenue have not be included in the financial models, but would result in reduced up front capital expenditure and ultimately revenue for the development. This leads to:
- reduced requirements for the upgrade of the bridge over the M13 4+3 lanes + bridge upgrade + access loop (R 48 million)

business as usual

- **energy:** the total electrical demand of urban core is 38MVA, or 28MVA connected due to diversity factor. eThekweni Electricity presently have an additional 19MVA available from the Assagay substation, however this supply is under pressure due to the growth within the Hillcrest area. This supply can be secured by commencing the power application in June 2018, with a payment of R 102 million. Electricity will only be available to the site in February 2024
- though not actually needed for the full urban core stage (triggered by the development of the Kassier Road North precinct), the full electrical demand for the complete development will have to be instructed at this stage, with an additional R 283 million to be paid for Eskom to provide the first phase (85MVA, with a further R 135.7 million to unlock the remainder of the 120MVA, substations, etc.) of supply however this will only be available in 2027/30. It is noted that the R 20 million paid to eThekweni Electricity for the 8MVA and the R 102 million to Eskom for the 19MVA supply will effectively be an abortive cost to the development

sustainability & innovation

- energy demand and consumption will be reduced through the use of best practice energy saving technologies, though not within the full control of THD, these initiatives 'can' (and should) be implemented by individual property developers. At the urban scale, it will be done in the following ways:
- the expansion of the district cooling system further reduces the electricity requirements in the urban core from 28MVA to 24,5MVA (refer to table 2 for the costing)
- by utilising the electricity supply of 8MVA from eThekweni Electricity provided for the shopping center, and introducing alternative energy generating initiatives (refer to table 2 for the costing) such as:
 - 1MVA – landfill gas to energy, Enviroserv (target date 2022, R25million, pay back period 5 years)
 - 6.7MVA – hazardous waste to energy, Enviroserv (target date 2024, R250million, pay back period 7 years)
 - domestic solid waste waste to energy will constitute the remaining electrical requirements, implemented on an incremental approach, with 8 modules of 5.5MVA planned over the next 16 years. All alternative energy technologies will create revenue for the development, with healthy a return on investment of between six (6) and seven (7) years. This allows for off-balance sheet financing potential
- site-scale energy production, photovoltaic systems (PV) on individual buildings and further renewable energy production will be managed by a precinct-wide smart grid with data backbone rolled out throughout the precinct

business as usual

- **water:** the water supply infrastructure installed for the shopping center, as described above, will be adequate to supply the water requirements for the balance of Urban Core

sustainability & innovation

- unchanged as the temporary supply for the shopping centre is sufficiently sized to service the full Urban Core precinct, however in order to create resilience within the development the principle of '**sponge city**' has been reviewed and these costs have been included within the internal costs of the financial models under section 3 This allows for infiltration of stormwater run-off deep into the geology under the urban core for seasonal storage; abstraction; treatment to potable standard and supplied to end user. The sale of water will generate revenue to the development and is also dealt with under section 3, subject to the conclusion of a detailed geo-hydrological study

business as usual

- **sewer:** the sewer generated by the balance of the Urban Core, will conveyed to the Umhlatuzana Wastewater Treatment Works (UWWTW) via the constructed 750mm diameter trunk sewer as described above. The trunk sewer will only be available from January 2023

sustainability & innovation

- by incrementally expanding the package wastewater treatment plant in 1MI/day modules the plant will ultimately be sized to 3 MI/day to service the full urban core. Each module, at a cost of R10mil, contributes to the deferred Capex and this is highlighted under section 3
- it should be noted that the ultimate proposal for sewer treatment for the full development is a modular, centralized works and to be constructed during the roll-out of future precincts (Kassier Road North) of the full development. This could include various energy producing technologies such as anaerobic digestion (AD) and uplift anaerobic sludge blanket (UASB). The package wastewater treatment plant could be relocated to the Assagay Precinct if required
- urine diversion at source will allow for reduced treatment costs and urine would be collected, stored and re-used for the nursery

business as usual

- **ecology:** typical water-wise but irrigated landscape installation

sustainability & innovation

- creation of naturally shaded walkways within the landscape
- introduction of bio-swale within the public realm landscape to infiltrate rainwater and attenuate stormwater
- indigenous species and water-wise landscape requiring no irrigation system in place, manual irrigation required during establishment period
- use of landscape to actively shade and cool hard surfaces
- use of indigenous species only to promote biodiversity and resilience

business as usual

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only available but needed 2020

though not actually needed for the full urban core stage (triggered by the development of the Kassier Road North precinct), the full electrical demand for the complete development will have to be instructed at this stage, with an additional R 283 million to be paid for Eskom to provide the first phase (85MVA, with a further R 135.7 million to unlock the remainder of the 120MVA substations, etc.) of supply however this will only be available in 2027/30. It is noted that the R 20 million paid to eThekweni Electricity for the 8MVA and the R 102 million to Eskom for the 19MVA supply will effectively be an abortive cost to the development

And then, going forward, just to get supply (let alone paying for consumption)

sustainability & innovation

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- the **expansion of the district cooling system** further reduces the electricity requirements in the urban core from 28MVA to 24.5MVA (refer to table 2 for the costing) **For R 20 million**
- by utilising the electricity supply of **8MVA** from eThekweni Electricity provided for the shopping center, and introducing alternative energy generating initiatives (refer to table 2 for the costing) such as:
 - **1MVA – landfill gas to energy**, Enviroserv (target date 2022, R25million, pay back period 5 years)
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- **site-scale energy production, photovoltaic systems (PV)** on individual buildings and further renewable energy production will be managed by a precinct-wide smart grid with data backbone rolled out throughout the precinct

It is clear that old paradigms,
which may well have been sensible at a point,
have not only taken us as far as we can go -
they're actually leading us up an urban cul-de-sac.

In particular,
the old paradigms make it increasingly harder to find
social and economic inclusion.

Possibly the greatest finding
in searching out new paradigms
is the clear indication
that emphasis on
'multi-disciplinary design'
is misdirected.

It has to be a matter of
"inter-disciplinary design"

While this ambitious vision is unprecedented in Africa,
it is totally within reach.

The real question is: why shouldn't we?