Plant & Earthworks Carbon Net Zero Plan

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Carbon NetZero goals and key deliverables

Phase I: *(2021 – Q1 2023)*

Key goals: *Uptake of digital design and performance technology*

Key deliverables: Cost efficiency and carbon reduction*…*

Phase II: *(2023 –2025)*

Key goals: *Continue transition to electric / hybrid alternative plant. Material management (reuse / recycle)*

Key deliverables: Alternate fuel options for up to 20 tonnes by 2030. Supply chain and site infrastructure (alternate fuel). Earthworks reduction in waste through reuse and recycle, change in standards.

Phase III: *(2025 and beyond)*

Key goals: *Infrastructure and supply chain development (electric / Hydrogen)*

Key deliverables: Alternate fuel options for above 20 tonnes by 2040

Summary

Changing the fuel requires heavy capital investments for the industry. For new technologies fleet management cycles may be a delaying factor. Today, it is not clear yet, which technology and the detailed timeline will be used by which supplier. Change in planning and utilisation such as better use of smart telemetrics and smart constructions

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Initial findings and next steps & actions

	Initial findings	Main Actions and next steps
Phase I: *(2021 – 2023)*	• Digital design… • 3D Machine Control / Remote Control / Connected Plant • Telemetric Management • Site set up support strategy	• PEC group working in collaboration with design to establish options. • RTB1 updated to make 3DMC mandatory (with exceptions) • Finalise and agree metrics on the telemetric triangle • SPS Site strategy development
Phase II: *(2022 – 2025)*	• Increase uptake in alternate fuel options (HVO, Electric / Hybrid / Hydrogen) • Material management to increase reuse /recycle • Change to standards • Digital design and rehearsal	• Continued OEM and supply chain engagements on technology developments • Identify and execute trial opportunities (plant and earthworks) • Review current material standards
Phase III: *2025 and beyond*	• Hydrogen fuel source alternatives • Infrastructure support • Semi and Autonomous	• OEM engagement on developments • Understand current and future supply chain infrastructure support developments. • CAP 3 development

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Detailed timing plan

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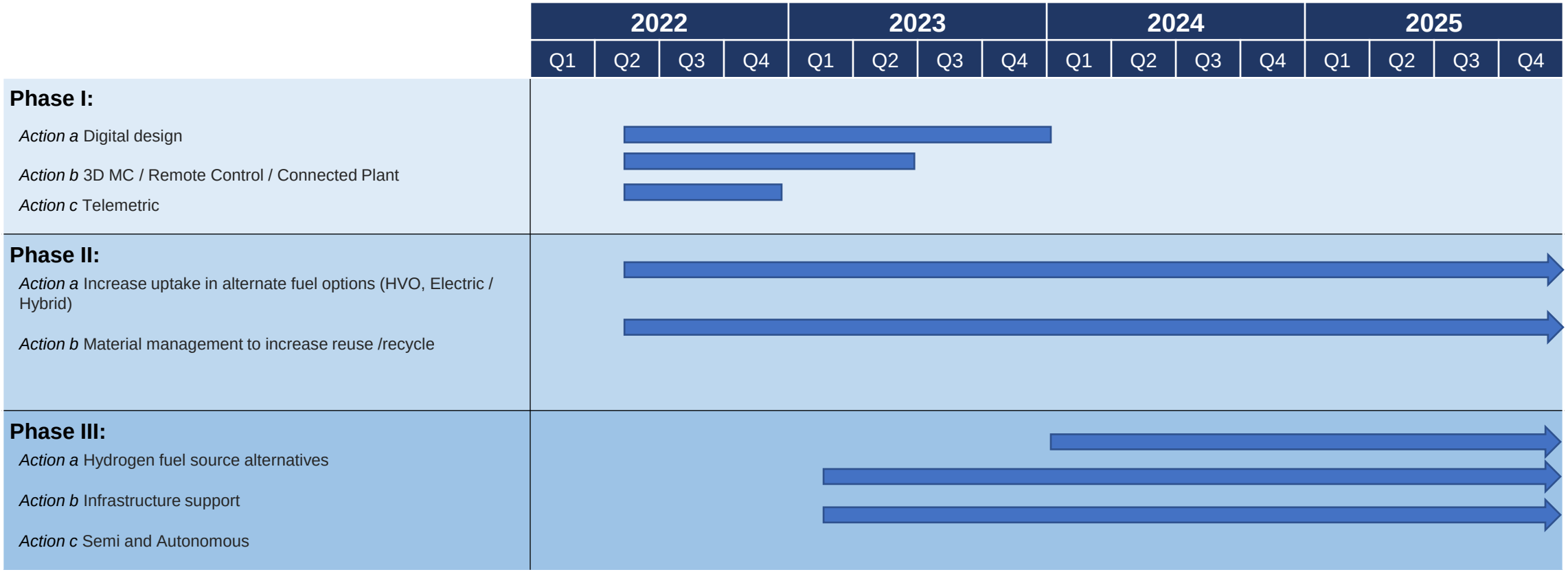

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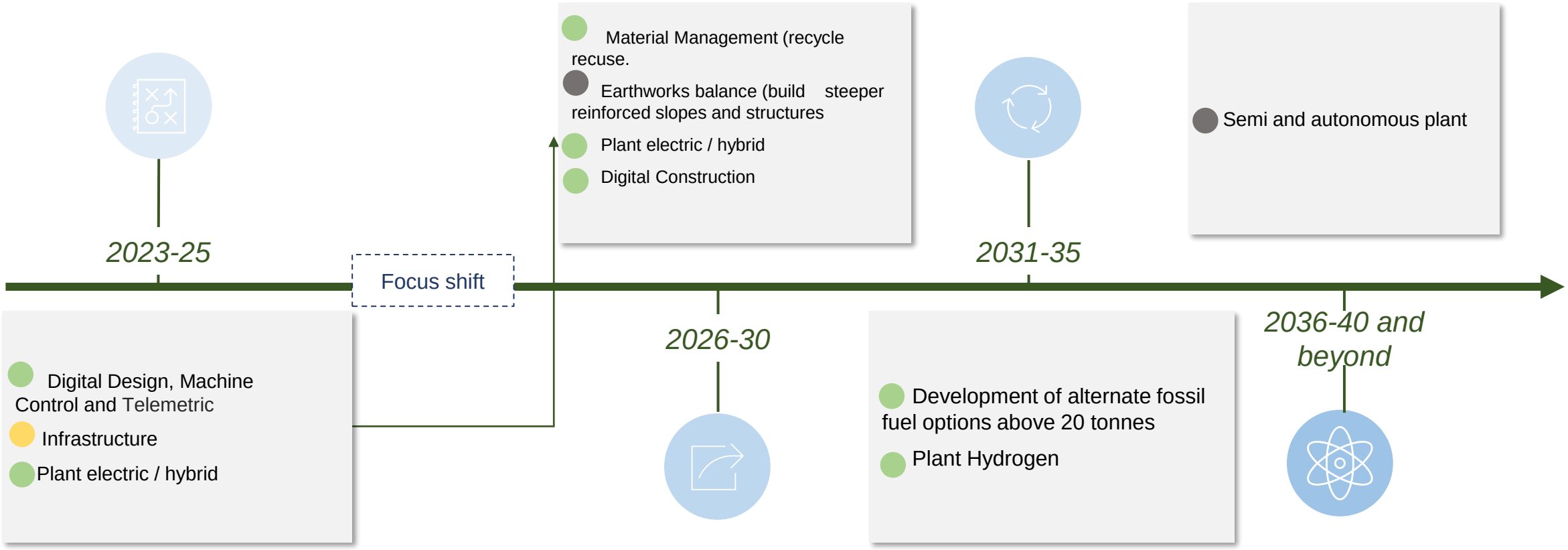
Carbon NetZero Qualitative Initiatives roadmap



Summary

Long term goal to prioritise carbon efficiency over other items to achieve a true earthworks balance, recognising that this would probably mean the purchase of additional land to reduce the requirement for steeper slopes with less conventional carbon intensive slope reinforcement techniques and structures and to allow excess materials to be reused in landscaping and habitat creation.

Legend: Higher Impact · Lower Impact · Unknown Impact

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