

Document information

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Executive summary

Overview

The proposal includes the demolition of an existing three-story dwelling to be replaced by a newly constructed house and ancillary accommodation designed to function together. The new dwelling will feature a shared, partly unheated basement, which serves as both a garage and leisure space. The development is located in the London Borough of Camden with a GIA of approximately 1,935 sqm.

This Sustainability Statement will be provided as evidence to the London Borough of Camden to demonstrate the development's holistic approach to sustainable design and construction. It summarises the contribution that the design will make to create a more sustainable development, drawing on information provided by specialist consultants and design reports, and identifying key features intrinsic to achieving low carbon developments.

Key sustainability features within the development will include:

- The development will reduce total carbon emissions by 22.0% from the fabric energy efficiency measures described in the 'Be Lean' section and will reduce total carbon emissions by 92.9% over Building Regulations (using SAP 10.2 carbon dioxide emission factors) with the further inclusion of low and zero carbon technology (Ground source heat pump and PV panels)
- A water consumption target of 105 litres/person/day through the implementation of water efficiency measures;
- A sustainable materials procurement policy and an efficient waste strategy on site;
- The implementation of health and wellbeing measures through design and operational procedures, including daylight, optimum indoor air quality and thermal comfort; and
- Protection of ecology on site during construction and biodiversity enhancement measures

Key Sustainability Measures

In summary, the key measures incorporated to meet planning requirements and to achieve a low carbon development address the following key areas of sustainable design and construction:

- Energy and CO₂
- Adaptation to climate change
- Flood risk mitigation and SuDS
- Waste
- Water efficiency
- Transport and connectivity
- Materials
- Health and wellbeing
- Land use and ecology

Additionally, a Whole Life Carbon Comparison Study has been carried out by Eight Versa

At the time of practical completion (year 0), the New Construction scenario exhibits a modest (2%) reduction in embodied carbon compared to the Approved Extension scenario. This difference arises primarily from the carbon emissions from demolition of the existing building offset by the increased carbon embodied in the larger, double-storey basement of the Approved Extension scenario. Moreover, it's important to note that the Approved Extension scenario presents substantially higher operational impacts than the New Construction scenario. This difference ultimately results in a significant 31% reduction in total whole life carbon emissions over the entire 60-year life cycle when opting for the new construction over the approved extension scenarios.



Introduction

Sustainability Introduction

The design team has significant experience in delivering schemes that are considered highly sustainable, either through application of formal green building rating systems, such as BREEAM and Home Quality Mark, as well as applying benchmarks from standards such as Passivhaus Design and adopting precedents from industry exemplary sustainable developments.

The scheme will reflect the holistic nature of sustainable development in the London Borough of Camden. The development will provide much needed high-quality residential space and will use local labour to boost employment. Health and wellbeing will be incorporated in the design by maximising daylighting, utilising healthy materials and contributing to the alleviation of fuel poverty in the region. The ecological value of the site will be maintained and protected. The development will enhance the ecological value of the site through measures.

Description of Development

The proposed development is to be located at Radlett House, NW8 6BT, London Borough of Camden. The site currently comprises of a two-storey dwelling house, plus habitable roof level accommodation. The proposal includes the demolition of an existing three-story dwelling to be replaced by a newly constructed house and ancillary accommodation designed to function together.

The aspiration for the scheme is to significantly improve the existing site and its immediate environment by providing an efficient and inclusive development, which meets the policy recommendations of the London Borough of Camden.

Figure 1 illustrates the proposed front elevation of the building. Figure 2 illustrates the ground floor plan and Figure 3 illustrates the basement floor plan.











Figure 2: Proposed ground floor plan of Radlett House, Radlett Place.



Figure 3: Proposed basement floor plan of Radlett House, Radlett Place.





Policy Context

National Context: The 2008 Climate Change Act

The UK Government is committed to reducing the UK's carbon emissions by 100% over 1990 levels through the Climate Change Act 2008. Achieving truly sustainable design and construction and forwarding the green agenda within the construction industry across the UK is inherent to meeting these emission targets. This development aims to do both of these.

To help monitor carbon reductions and to plot progress being made for future plans and investments in the UK's low-carbon economy, intermediary targets have been established to ensure that the UK remains on course for meeting the 100% reduction by 2050.

Concurrent with reducing CO_2 emissions by 100% by 2050 is the European Climate Change Policy targets. It sets the objective of ensuring 20% of energy consumption is generated from renewable sources by 2020 whilst also reducing Europe's carbon footprint by 20%. Ensuring a fabric first approach with consideration to renewable energy production fits both the climate change act and the European Commission's 2020 targets for reducing greenhouse gas (GHG) emissions.

National Context: National Planning Policy Framework 2021

The National Planning Policy Framework (NPPF) published in 2021 sets out the UK Government's planning policies for England. Planning law requires that applications for planning permission must be determined in accordance with the local development plan unless material considerations indicate otherwise. The National Planning Policy Framework must be taken into account in preparing the development plan and is a material consideration in planning decisions. Planning policies and decisions must also reflect relevant international obligations and statutory requirements.

Regional Context: The London Plan 2021

The London Plan (March 2021) is the overall strategic plan (Spatial development Strategy) for London and replaces the previous (2016) iteration. This document, therefore, plays a key role in the planning process in all the 32 London Boroughs and the City of London.

The London Plan aims to shape the planning process and sets out an integrated economic, environmental, transport and social framework for the 32 London Boroughs, the City of London and the Mayoral Development Corporations (MDCs) over the next 20-25 years (2019-2041), including the following key aspects of the Mayor of London's other strategies:

- Transport;
- Economic Development;
- Housing;
- Culture;

- Social issues (such as children and young people, health inequalities and food); and
- A range of environmental issues (such as climate change, air quality, noise and waste).

Within the London Plan there are a number of key targets for 'major developments', not applicable to this scheme:

- Policy SI 2: Development should be net zero-carbon and should include a detailed energy strategy to demonstrate how the zero-carbon target will be met within the framework of the energy hierarchy; and,
- A minimum on-site reduction of at least 35% over Target Emission Rate identified in Building Regulations 2013 is required.

The London Plan (2021) also sets out the following targets for major developments. This has been followed as guidance for 'best practice':

- Efficient use of natural resources (including water);
- Minimising pollution (including noise, air and urban runoff);
- Minimising the generation of waste and maximising reuse or recycling;
- Avoiding impacts from natural hazards (including flooding);
- Ensuring developments are comfortable and secure for users;
- Securing sustainable procurement of materials, using local supplies where feasible; and
- Promoting and protecting biodiversity and green infrastructure.

Of particular relevance to this report are the following policies required by the Plan:

- Policy D6 Housing Quality and Standards
- Policy G4 Open Space
- Policy G5 Urban Greening
- Policy G6 Biodiversity and Access to Nature
- Policy SI1 Improving Air Quality
- Policy SI2 Minimising Greenhouse Gas Emissions
- Policy SI3 Energy Infrastructure
- Policy SI4 Managing Heat Risk
- Policy SI5 Water Infrastructure
- Policy SI12 Flood Risk Management
- Policy SI13 Sustainable Drainage
- Policy T1 Strategic Approach to Transport
- Policy T3 Transport Capacity, Connectivity and Safeguarding
- Policy T5 Cycling
- Policy T6 Car Parking

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Local Context: Camden Local Plan 2017

The Camden Local Plan, published in July 2017, sets out the Council's planning policies. It responds to the Borough's unique characteristics and provides a comprehensive local policy framework to deliver Camden's future sustainable development. The Plan is supported by the supplementary planning documents 'Camden Planning Guidance' adopted in January 2021.

The Camden Local Plan states a key strategic objective as 'investing in our communities to ensure sustainable neighbourhoods'. This is complimented by further objectives embedded in the Local Plan that define the sustainability vision of the council.

Chapter 8 'Sustainability and climate change' within the Camden Local Plan lists key sustainability objectives for the Borough. The following strategic objectives are relevant to the proposed development and compliance with these will be demonstrated in this Sustainability Statement:

8.3 - Policy CC1 Climate Change mitigation - Developments should reduce carbon dioxide emissions in line with the steps in the energy hierarchy. Developments should support this by ensuring the availability of sustainable transport options, optimising resource efficiency and encouraging sensitive energy use.

8.18 - Resource Efficiency and Demolition - All developments should optimise resource efficiency through waste and energy reduction, minimising materials required, opting for materials with low embodied carbon content and enabling low energy and water demands.

8.33 - Policy CC2 Adapting to Climate Change - All developments should adopt appropriate climate change adaptation measures such as green infrastructure and SuDS where feasible.

8.53 - Policy CC3 Water and flooding- Developments should incorporate water efficiency measures, consider the impact of development in areas prone to flooding and avoid harm to the water environment. Refurbishments will be expected to meet BREEAM water efficiency credits.

8.75 - Policy CC4 Air Quality - Developments should mitigate the impact of construction and the completed development on air quality in the borough. Construction should adopt sustainable design and construction methods including measures that minimise negative impacts on air quality.

8.90 - Policy CC5 Waste - Developments should include facilities for the storage and collection of waste and recycling.

4.84 - Policy C5 Safety and Security- Developments should incorporate design principles that contribute to community safety and security.

6.59 - Policy A3 Biodiversity - Developments should not directly or indirectly result in the loss or harm to a designated nature conservation site or adversely affect the status or population of priority habitats and species. The demolition and construction phase of a development, including the movement of works vehicles, should be planned to avoid disturbance to habitats and species and ecologically sensitive areas, and the spread of invasive species.

6.85 -Policy A4 Noise and Vibration - Developments should not generate unacceptable noise and vibration impacts.

A number of Camden Planning Guidance (CPG) documents were adopted in January 2021 to support the policies in the Camden Local Plan and form supplementary planning documents (SPDs) for planning decisions. The full list of adopted documents relevant to sustainability include:

• Access for All CPG - March 2019 - All developments should be inclusively designed and useable by all to promote equality of opportunity.

Air Quality - January 2021 - All developments should protect future occupants from exposure to poor air quality and should limit their impact on local air quality and be at least air quality neutral.
Biodiversity CPG - March 2018 - Development proposals must demonstrate how biodiversity considerations have been incorporated into the development, how the five-point Mitigation Hierarchy

considerations have been incorporated into the development, how the five-point Mitigation Hierarchy has been addressed and what positive measures for enhancing biodiversity are planned.

• Energy efficiency and adaptation - January 2021- Developments should achieve at least 20% reduction in CO2 from onsite renewables (after all other energy efficiency measures have been incorporated)

• Transport - January 2021 - Developments should demonstrate what measures will be required and implemented in order to mitigate the transport impact of the development.

• Trees CPG - March 2019 - All developments should assist in achieving the aim to preserve existing tree and canopy coverage where possible as well as increase and improve tree coverage in the design of new developments.

• Water and flooding CPG - March 2019 - Refurbishments and other non-domestic development will be expected to meet BREEAM water efficiency credits



Energy and CO₂

The Energy Hierarchy

The proposed scheme has followed the energy hierarchy that is illustrated below:



Source: Greater London Authority

Key measures

Key measures identified for each stage are shown below: • Be Lean:

- o Low U-values for opaque elements and fenestration
- o Low g-value
- o Low air permeability
- High efficiency lighting and sensors
- o Mechanical ventilation with heat recovery
- o Wastewater heat recovery

• Be Clean:

- o N/A
- Be Green:
 - o Ground Source Heat Pumps to provide space heating and hot water
 - o Photovoltaic panels

Table 1: New Built dwelling (Scenario 2)

GLA's Energy Hierarchy: Regulated CO2 - Calculated using SAP 10.2 CO2 factors

	Baseline:	Be lean:	Be clean:	Be green:
CO ₂ emissions (tCO ₂ /yr)	16.24	12.66	-	1.16
CO ₂ emissions saving (tCO ₂ /yr)	-	3.58	-	11.50
Saving from each stage (%)	-	22.0	-	70.8
Total CO2 emissions saving (tCO2/yr)	15.08			

92.9% total CO2 savings over 2021 Building Regulations Part L achieved

GLA's Energy Hierarchy - Regulated Carbon Emissions

The proposed scheme has followed the energy hierarchy. A graphical illustration of how the scheme performs in relation to Building Regulations and the Energy Hierarchy is shown below. Carbon dioxide emission factors for SAP 10.2 have been used for the calculation. As demonstrated in the figure the proposed scheme will reduce carbon emissions by 22.0% from the fabric energy efficiency measures described in the 'Be Lean' section and will reduce total carbon emissions by 92.9% over Building Regulations (using SAP 10.2 carbon dioxide emission factors) with the further inclusion of low and zero carbon technology (Ground source heat pump and PV panels).

Therefore, the scheme meets and exceeds the planning policy carbon reduction target and complies with London Plan 2021 Policy SI2 and Part L 2021.







Adaption to Climate Change

Climate Change Mitigation

The purpose of an energy assessment is to demonstrate that climate change mitigation measures comply with London Plan energy policies, including the energy hierarchy. It also ensures energy remains an integral part of the scheme's design and evolution.

Flood Risk and Sustainable Drainage

Radlett House, Radlett Place is located within Flood Zone 1 of the Environment Agency's Flood Map for Planning, as shown in Figure 4. This is defined as an area with little or no risk to flooding where the annual probability of river, tidal and coastal flooding (with defences where they exist) is <0.1% i.e. less than 1 in 1,000 years.

Since the site is located in Flood Zone 1 and is less than one hectare, a Flood Risk Assessment is not required according to Policy SI12. Additionally, the impermeable area of the site is not increasing. In accordance with Policy SI12, the development will incorporate sustainable drainage systems (SuDS), including attenuation measures to manage the risk of surface water runoff in accordance with Policy CC2 and CC3.

Flood Map



Figure 6: Flood map showing the approximate location of the development within Flood Zone 1.



<u>Waste</u>

Construction Waste Management

Resource efficiency will be promoted through effective and appropriate management of demolition and construction site waste, as per policy 8.18.

In line with the waste hierarchy, during the construction phase, the approach will be the following:

- Use reclaimed materials;
- Use materials with higher levels of recycled content; and,
- Use new materials.

For any demolition, the following approach will be adopted:

- Prioritise the on-site reuse of demolition materials;
- Adopt on site recycling and, where required, use off site recycling; and,
- The least preferred option disposal to landfill.

A site waste management plan will be developed which adopts best practice benchmarks for resource efficiency, details procedures and commitments to minimise non-hazardous and hazardous waste at the design stage and monitors/measures waste production on site. The plan will apply to the location of the building.

The site waste management plan will also include procedures and commitments to sort and divert waste from landfill through the following:

- Re-use on site;
- Salvage/ reclaim for re-use off-site;
- Return to supplier via a 'take-back' scheme;
- Recovery and recycling using an approved waste management contractor; and
- Compost.

Operational Waste

The communal refuse store provides safe and convenient access to the occupants. The store specifications are in accordance with Policy CC5.

Construction Management

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Construction Management

Construction Environmental Management

Environmental impacts of the construction works will be mitigated as far as possible. This will include the incorporation of the following:

- Contractor following environmental management system processes (under ISO14001), including the development of a construction environmental management plan (CEMP) specific to the sites;
- Training and site induction of all site operatives;
- Monitoring of energy, water and transport to and from site during construction;
- Management of waste on site;
- Following best practice pollution guidance from the Environment Agency;
- Ensuring all site timber is responsibly sourced in line with the UK Government's Timber Procurement Policy;
- Minimising vehicle emissions through the use of catalytic converters and the regular maintenance of vehicle engines;
- Damping down of brick walls etc. during any building demolition;
- Regularly inspecting and wet suppressing materials/soil stockpiles where necessary (including wind shielding or completely enclosing, storing away from site boundaries, and restricted height of stockpiles);
- Appropriate orientating of material stockpiles;
- Providing wheel washing and wet suppressing during the loading of wagons vehicles;
- Covering vehicles carrying dry soil and other wastes;
- Shielding of dust-generating construction activities;
- Providing suitable site hoarding;
- Restricting vehicle speeds on haul roads and other unsurfaced areas of the site; and,
- Inspecting unsurfaced haulage routes, and wet suppressing should this be necessary (in times of prolonged dry periods).

Considerate Constructors

The scheme will adopt the principles of the Considerate Constructors Scheme (CCS). The CCS scheme aims to recognise and encourage construction sites that are managed in an environmentally and socially considerate, responsible and accountable manner.

Water Efficiency

Water Conservation

The development proposal recognises the need to create a scheme that is efficient and adaptable to future climatic scenarios, in accordance with Policy CC1 and Camden Planning Guidance for water.

The design team is committed to achieve a significant reduction in internal water use for the development over typical performance, equating to a water consumption target of 105 litres per person per day under the optional national technical standard.

Water consumption will be reduced through the use of water efficient components for all specified domestic water-consuming components (including low-flow showerheads and taps, dual flush toilets and low water consuming washing machines and dishwashers), water meters for each dwelling, water recycling systems where appropriate and flow control devices that regulate the supply of water to each facility according to demand.

A permanent automated water leak detection system that alerts the building occupants to a major water leak on the mains water supply within the building and between the building and the utilities water meter will be installed.

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Transport and Connectivity

A Transport Assessment will be produced by RGP for the scheme as required by Policies T3 and Camden Planning Guidance for transport.

Public Transport

The development has a PTAL rating of 2 which represents below average connectivity as the network of public transport routes accessible from the site is not extensive. There are three different bus stops located within 960m of the site serving 9 different bus routes. The closest bus stop, Avenue Road, can be reached in 8 minutes by foot and is served by bus routes C11 and C31. St. John's Wood Rail Station is within 805m and can be reached in 12 minutes.

Cycling and Car Provision

Cycle parking will be provided in accordance with the London Plan, Policies T5. There will be a provision for up to 6 bikes in the coach house.

Parking will be provided for residents in line with the London Plan recommendations and Policy T6. Electric car charging points will be installed.

Accessibility and Security

Creating a secure but fully accessible development is a key part of the proposed development. To ensure this is achieved, the design team will adopt, where feasible, the key principles of "Secured by Design" within all elements of the scheme.



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Materials

Materials and Waste Introduction

Sustainable material sourcing and waste management will be considered throughout the life of the building to ensure the scheme's environmental footprint is minimised as far as possible. The scheme will also ensure low embodied carbon is employed throughout the procurement, transport and construction of building materials, together with end-of-life emissions in accordance with Policy CC1 and 8.18

Materials Selection and Sourcing

The design team has confirmed that efforts will be made to reuse materials where feasible and that where required, new materials will be responsibly sourced. New construction materials will be selected, where feasible, with a low environmental impact. In addition, the project will aim for new materials to come from a recycled or reused source, including a high-recycled content in steel. Minimum standards apply to new timber, which must be sourced in accordance with the UK Government's Timber Procurement Policy.

In addition, all timber will be FSC/ PEFC certified, all concrete will be BES 6001 certified, and any other material will be ISO 14001 certified for both key processes and supply chain/ extraction processes where feasible to do so.

The Green Guide for Specification is a reference tool, providing guidance on the relative environmental impacts for a range of different building elemental specifications, based on Life Cycle Assessment and the Environmental Profile Methodology. The design team will reference the Green Guide to Specification to help specify materials with a low environmental impact, where feasible. The design will incorporate at least 5 build-up elements that will be A-C rated on the Green Guide.

Insulation specifications will eliminate hydrochlorofluorocarbons (HCFCs) and ozone depleting materials, wherever possible. All insulation specified will have a Global Warming Potential (GWP) of less than 5 and be responsibly sourced to have a low embodied impact.

Embodied Carbon Analysis

The development will utilise a number of opportunities to cut embodied carbon, as follows:

- A materials efficiency strategy will be followed throughout the design, procurement and construction stages of the development, to ensure the scheme produces less waste on site. For example, adjustment of some sizes will be made to minimise offcuts of materials, and some bespoke materials will be developed off-site;
- Materials will be procured from the local area where possible, to reduce carbon through transportation;
- Materials and products with a higher recycled content will be preferentially procured where feasible, as these have a low embodied carbon; and,
- Consideration has been made to use timber as a low embodied carbon alternative to steel and concrete where possible.

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Health and Wellbeing

Occupant Wellbeing

The development has been designed to ensure the wellbeing of occupants in terms of levels of fresh air, thermal comfort and reduction of overheating, access to natural light, good lighting levels internally and externally, acoustic performance and access to safe drinking water.

The building services strategy has been carefully considered in order to balance the need for energysmart, low carbon technologies with the need for adequate and controllable ventilation, heating and cooling.

Construction Impacts

The unmitigated risk to local sensitive receptors from emissions of dust and pollution from construction is deemed to be low. With the mitigation measures in place, the residual effects arising from the construction phase of the proposed development would be deemed 'not significant'.

Daylight

Due to the singular nature of the project, encompassing only one building, there is no requirement for a Daylight report to be conducted

Inclusive Design

The guidance in the Approved Document M (March 2016) will be incorporated to achieve an inclusive built environment that enables users to maximise their individual abilities and enjoy a safe and independent participation. The new dwelling has been designed to demonstrate compliance to Part M4(1): Visitable dwellings and Part M4(2): Accessible and adaptable dwellings

Land Use and Ecology

Protection of Biodiversity

The design team is committed to protecting biodiversity on site and will implement the following measures:

- Confirm that all relevant UK and EU legislation relating to protection and enhancement of ecology has been complied with during the design and construction process;
- To safeguard biodiversity at Radlett House, measures include:
 - o Ensuring awareness among demolition contractors of legal bat protections
 - o Caution during soft stripping works to avoid disturbing potential roosts
 - o Immediate cessation of work if bat evidence is found
 - o Avoiding vegetation removal during bird nesting seasons,
- Implement working methods in line with best practice to manage dust and water runoff; and
- During the construction phase a Biodiversity Champion will be appointed to monitor and limit environmentally detrimental activities. They will also train the workforce on the project to raise their awareness of environmental impacts during construction.

Ecological Enhancements

The design team is also committed to enhance biodiversity on site in line with Policies G6.

The proposed development will aim to incur no negative change in ecological value and a suitably qualified ecologist will provide early design stage advice on:

- How to improve the ecological value of the site;
- Confirm that all relevant UK and EU legislation relating to protection and enhancement of ecology has been complied with during the design and construction process; and,
- Produce a landscape and habitat management plan to cover at least the first five years after project completion, if applicable.

To enhance biodiversity at Radlett House the following will be implemented:

- Installation of bat and bird boxes
- Wildlife-friendly planting
- Introduction of dark corridors for bats
- Hedgehog doorways
- Removal of invasive plant species
- Installation of bat-friendly lighting



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Conclusions

Conclusions

This Sustainability Statement has responded to the London Borough of Camden local planning policy requirements.

In summary the scheme will adopt the following sustainable features:

- Proposed scheme targets a 22.0% cut, reaching 92.9% total carbon reduction vs. Building Regulations with advanced technologies.
- Reduce energy consumption by targeting improved U-values and airtightness. Low energy lighting will be specified.
- Implement a site waste management plan and stringent resource efficiency benchmarks.
- Follow best practice policies in terms of air, water and ground pollution and appoint a contractor who will register for the Considerate Constructors Scheme.
- Achieve a water consumption target of 105 litres/person/day through the implementation of low water-consuming fittings.
- Utilise sustainable transport, including access to public transport and inclusion of cycle storage facilities.
- Minimise embodied carbon through efficient design, procurement of materials from a local source, or with a high-recycled content.
- Be of high build quality, surpassing the minimum Building Regulations.
- Ensure all materials are responsibly sourced and of low environmental impact where feasible.
- Consider health and wellbeing through design and operational procedures, including daylight, optimum indoor air quality and thermal comfort.
- Design prioritizes biodiversity, complying with laws and implementing wildlife-friendly measures.
- As demonstrated by Whole Life Carbon Comparison Study at the time of practical completion (year 0), the New Construction scenario exhibits a modest (2%) reduction in embodied carbon compared to the Approved Extension scenario. This difference arises primarily from the carbon emissions from demolition of the existing building offset by the increased carbon embodied in the larger, double-storey basement of the Approved Extension scenario. Moreover, it's important to note that the Approved Extension scenario. This difference ultimately higher operational impacts than the New Construction scenario. This difference ultimately results in a significant 31% reduction in total whole life carbon emissions over the entire 60-year life cycle when opting for the new construction over the approved extension scenarios.