17. Cumulative Impact Assessment

Environmental Appraisal
Volume I

17.1 CUMULATIVE IMPACTS

17.1 Introduction

This chapter of the Environmental Appraisal (EA) assesses the impact of the Proposed Development in combination with potential cumulative environmental effects of other developments in the area, and has been written by URS Corporation Ltd (URS). The cumulative scenario assessed comprises the proposals detailed within the Site Development Context Plan (SDCP) and a number of external developments (highlighted in Table 17-2) within the surrounding area.

By definition, cumulative impacts are those that result from incremental changes caused by foreseeable future developments together with the Proposed Development. For the cumulative assessment, two types of impact have been considered:

- The combined effect of individual impacts from the Proposed Development (for example noise, airborne dust and traffic) on a single receptor; and
- The combined impacts of several development schemes which may, on an individual basis be insignificant but, cumulatively, have a significant effect.

This chapter describes the scope of the cumulative assessment in terms of the other schemes considered and the potential for cumulative impacts and mitigation measures (if applicable) required to prevent, reduce or offset the impacts identified.

17.2 Legislation and Planning Policy Context

EC Directive 85/337/EEC (Ref 17-1) requires assessment of *"the direct effects and any indirect, secondary, cumulative, short, medium and long term, permanent or temporary, positive and negative effects of the project"*. EC Directive 97/11/EC (Ref. 17-2) selection criteria for projects to be assessed includes "the *cumulation with other projects"* and the *"existing land use."*

Although the HEFF project is exempt from the EIA Regulations, a cumulative assessment has been undertaken broadly in line with Schedule 3(1) of the Town and Country Planning (Environmental Impact Assessment) (England and Wales) Regulations 1999 (Ref. 17-3), which states that *"the characteristics of development must be considered having regard, in particular to ... b) the cumulation with other development"*, Schedule 3(2) *"the existing land use"* and Schedule 4(4) *"description of the development on the environment which should cover ... cumulative effects."*

17.3 Methodology and Assessment Criteria

17.3.1 Combined Effects of Individual Impacts

The combined effects of individual impacts from the Proposed Development on a particular receptor have been assessed within each of the individual technical assessment Chapters, and predominantly relate to the construction phase of the project.

17.3.2 Combined Effects with Other Developments

The AWE Aldermaston & Burghfield Site Development Context Plan (SDCP) 2000–2015 (Ref. 17-4) sets out the overall approach to the modernisation of AWE Aldermaston and AWE Burghfield, through the refurbishment and replacement of existing facilities.

Within the SDCP for AWE Aldermaston, future potential beneficial impacts associated with the development of the site have been identified. AWE has a commitment to adopt the principles of sustainability in all new developments. Sustainability is a core part of the Site Development Context Plan, as explained in the strategies prepared to support the delivery of the SDCP.

There are a number of new build projects scheduled for the AWE Aldermaston site between 2005 and 2015 and these form the basis for the assessment of cumulative effects. This includes the New Office Accommodation (NOA) at Aldermaston, providing a total of 20,694 m^2 gross floorspace (see Table 17-1). NOA was granted planning permission from West Berkshire Council in January 2007 and construction work has now begun. Therefore, NOA has been assessed as part of the baseline and does not form part of the cumulative assessment. Therefore the cumulative scenario comprises the remaining Projects scheduled in the SDCP.

Table 17-1 sets out those AWE schemes considered within the cumulative impact assessment.

Table 17-1 AWE Schemes Considered within the Cumulative Assessment

Aldermaston New Build Projects – identified in the SDCP	Indicative Floorspace
Manufacturing/Production	34,500 m^2
Testing/Research	21,500 m^2
Computing/Communications	4,700 m^2
Other Office and Business Support Accommodation	28,306 m^2
Environmental Proposals and Programmes	N/A floorspace

In addition to the forthcoming development at AWE, a number of external schemes have been considered as part of the cumulative assessment. The Schemes which were considered as part of the assessment are highlighted in Table 17-2.

Table 17-2 External Schemes Considered within the Cumulative Assessment

Each technical specialist has reviewed the SDCP and the details of the external

Development	Detail	Status
Land Adjacent to Kennet Works Bath Road Padworth West Berkshire	Residential development comprising 12 houses (3 bedroom) and one 3 bed detached bungalow.	Under Construction
Halfway Garage Bath Road Padworth Reading RG7 5HX	24 Apartments	Approved – construction not started
Land at Basingstoke Road Aldermaston West Berkshire	Residential development comprising 99 dwellings (including 30 affordable dwellings) together with access roads and footways, the provision of public open space and landscaping and the demolition of one dwelling (Orchard Dene).	Under construction/partially complete
Berkshire Business Park (Eastern Park) Reading Road Aldermaston	150,000 sq ft of High Technology	Under Construction
Berkshire Business Park (Easton Park) Reading Road, Aldermaston, Reading, Berkshire	Development of buildings for B1, B2 and B8 purposes	Under Construction
Land at Fishermans Lane Aldermaston West Berkshire	29 Dwellings with associated roads and public open space	Approved – construction not started

schemes to determine any potential cumulative impacts and key issues when assessed along with the proposals of the proposed development. Where no cumulative impacts have been identified, this is stated.

17.4 Impact Assessment and Mitigation

This section presents the findings of the cumulative impact assessment, detailing mitigation measures, to minimise or remove impacts, where applicable.

17.4.1 Combined Effects of Individual Impacts

The combined effects of individual impacts from the Proposed Development on a particular receptor have been assessed using the experience and judgement of each technical specialist.

It is considered that the construction phase of the Proposed Development will have the greatest potential to contribute to impact interactions. With the exception of the positive impacts associated with the combining of all explosive fabrication facilities into one location, there are not considered to be any significant completed development impact interactions.

During the construction phase, potential impacts exist for the sensitive receptors, as detailed in *Chapter 2: EIA Methodology*. The receptors considered to be most sensitive to cumulative impacts during the construction phase are the local road network, and existing residents in nearby properties. The criteria for identifying those receptors that are considered to be potentially sensitive include the nature of the receptor, proximity to the works, and extent of exposure to impacts and impact interactions.

Potential impact interactions are largely related to noise, vibration, dust and traffic. Interactions will take place during the construction phase, and noise, vibration and traffic impacts will predominantly occur during the piling phase. Compliance with the mitigation measures as detailed in *Chapter 6: Construction Phase* will reduce as far as possible these impact interactions.

Overall it is anticipated that there will be temporary minor adverse negative impact interactions during this phase.

17.4.2 Combined Effects of the Development with 'Other Schemes'

The following provides an assessment of the potential cumulative impacts associated with each environmental aspect and their likely significance. Where no cumulative impact has been identified, this is stated.

17.4.2.1 Ground Conditions

The cumulative impact on ground conditions is considered to be negligible provided appropriate mitigation measures are applied. In the event of discrete areas either with contamination or with contamination potential being remediated, there will be an overall beneficial cumulative impact.

17.4.2.2 Water Resources

It is considered that the cumulative impact of the identified developments on water resources will be negligible provided that standard practices are adopted in design and that appropriate mitigation measures are applied (i.e. the SUDS scheme).

No cumulative impacts on Controlled Waters are anticipated through the development of the Proposed Development and neighbouring sites with planning approval.

17.4.2.3 Traffic and Transport

Chapter 9: Transport assesses the impact of the Proposed Development and other cumulative schemes on the surrounding highway network, public transport and local pedestrian areas. A cumulative assessment of the Investment Programme has been undertaken and is detailed in the Preliminary Evaluation of the Transport Implications of the SDCP (PETIS) which is included within the planning submission documentation. At Aldermaston, it is estimated that the Investment Programme will generate some 4,850 additional vehicular two-way trips (including 192 HGV two-way trips) during the day in 2012. At Burghfield, it is estimated that the Investment Programme will generate some 1,150 additional two-way vehicular trips (including 90 HGV two-way trips) during the day in 2012. The majority of the movements generated by the additional operational workforce will be ameliorated if the Travel Plan targets are met. Residual cumulative impacts will largely be related to construction phase traffic. PETIS has been submitted to WBC, HCC and BDBC. Consultation will be held to discuss and determine opportunities to manage vehicle flows and improve pedestrian facilities to minimise construction phase residual impact.

17.4.2.4 Socio-Economics

There are a number of new build projects scheduled for the AWE Aldermaston site between 2005 and 2015. This is in the context of the investment in sustaining key skills and facilities at the AWE. A summary of proposed facilities is provided in Table 17-1.

The AWE Aldermaston site can be split into three broad functional areas. The Development, along with the additional office and business support accommodation, is located to the west of Griffin Road and to the south of the Nuclear Storage and Processing Area. The future plans aim to retain the campus style layout of this Business Support Area whilst improving the quality of the facilities. In addition, the western support area is potentially the new main entrance of the site, with the visitor entrance relocated to improve the presentation of the site. The operational socio-economic impacts of other developments will therefore not be significant.

Along with internal AWE developments, a number of external developments have been identified (Table 17-2) which all contribute to a positive cumulative impact in relation to the creation of jobs during both construction and operational phases.

17.2.4.5 Landscape & Visual

The assessment of cumulative effects considers the landscape and visual effects of HEFF with in the context of the Site Development Context Plan (SDCP) and alongside the external schemes listed in Table 17-2.

There will be a change on the landscape character of the western section of the site during the construction and operational phases associated with NOA (plot 16 on the SDCP (Figure 4-1) and Orion (plot 8). There will be a temporary transition and disturbance of landscape / townscape character areas occurring during the construction phase.

The operation of the new Orion building will extend the perception of the adjacent Contained Intensive Industrial Plateau area further to the west, replacing the northern section of the Contained Disused Plateau character. The operational stage of the proposed NOA building will also extend the Urban Core character area further to the west. The operation of the development plots proposed within the core of the site will not affect the character of the existing Contained Intensive Industrial Plateau area or the existing area of Urban Core.

The areas of new car park proposed on the southern boundary will replace the south-eastern part of the Plateau Hangers character area with a new character of Wooded Plateau Car Park. The car park on Griffin Road running north to south in the centre of the site, continues to form part of the Wide Plateau Corridor.

The proposed development areas in the eastern section of the site including the HEFF proposals would create individual and separate development pockets within the Open Grassy Heath Plateau during both the construction and operational phases. The development of plot 4, adjacent to the south-eastern edge of the Urban Core character area, will extend this character area further north into the Open Grassy Heath Plateau area, resulting in the loss of a small part of this character area. The proposed HEFF development and plots 9 and 10 would increase the perceived development density in the eastern sector of the site, however, these would be seen in the context of the larger scale developments which already exist to the east and west.

Assuming that the future development, as identified on the SDCP, does not encroach above the treed horizon, there would be no significant impacts on the existing views of the site from the surrounding wider landscape and in particular those views from within the North Wessex Downs AONB to the north. There are existing views of the site from the residential properties, road corridors and employment areas immediately bounding the site, which will continue until the boundary structure planting has established.

The Proposed Development parcels, assuming that these would be no greater in height than the existing buildings, within the centre of the site, will not be perceptible from the surrounding area as these will be contained by the existing development associated with South Road and the large scale buildings in the core of the site.

Views of the western section of the site are generally limited to the road corridors bounding the site, that of Reading Road and Red Lane. Wider views are

contained by the extensive woodland plantations outside the site, coupled with the vegetation within the site and that to the boundary. The proposed development on the western section of the site, assuming that the building heights do not extend above the tree canopy, including the new car park to Griffin Road, would not extend the existing visibility of the site. The character of the view will remain unaltered, as views of the buildings are set within a well treed context.

The cumulative visual effect of the proposed developments would not extend the existing visual envelope of the site, but would change the character of the views. In the longer term, the implementation of decommissioning of the boiler house, its stacks and the steam pipeline, together with the establishment of the proposed landscape structure planting, would when combined, further reduce the visibility of the more unattractive built infrastructure elements in the local and wider landscape.

The Proposed Facility will not be visible from any of the other external schemes and consequently no landscape or visual cumulative impacts have been identified

17.4.2.6 Air Quality

Given that the anticipated air quality impacts associated with the HEFF are deemed to be negligible, there are not anticipated to be any cumulative material changes in combination with other developments at the Aldermaston AWE site.

The AWE Aldermaston & Burghfield Site Development Context Plan (SDCP) 2000–2015 (Ref. 10-25) sets out the overall approach to the modernisation of AWE Aldermaston and AWE Burghfield, through the refurbishment and replacement of existing facilities. AWE Burghfield occupies a 225 acre site, approximately 11 kilometres east of Aldermaston.

The SDCP describes a number of proposals for new buildings at the Burghfield and Aldermaston Sites, plus demolition or refurbishment of existing buildings.

Due to the distance between Burghfield and Aldermastion, demolition and construction activates within the respective site boundaries will not cause significant a cumulative impact on air quality at sensitive receptors.

It is possible that traffic associated with demolition and construction activities will share a portion of the major transport routes as they approach Burghfield and Aldermaston. Therefore emissions from these vehicles have the potential to have a minor cumulative impact on local air quality. However, this is likely to be insignificant compared to that associated with base traffic flows along these major routes and, in the presence of low background concentrations of pollutants in the area (as described in this Chapter), is very unlikely to lead to exceedences of the AQS objectives.

This cumulative assessment has also included an assessment of nearby external schemes (listed in Table 17-2) and has concluded that there will be a negligible cumulative impact due to the distance between schemes and to the nature of atmospheric dispersion.

Indeed, the SDCP recognises the opportunity for promoting sustainable transport choices for staff contractors and visitors during the implementation of the programme.

17.4.2.7 Noise and Vibration

The HEFF project forms just one part of the programme of work to replace and refurbish facilities on the AWE Aldermaston site.

As it is recognised that these developments may produce some environmental impacts this has been addressed by the Site Development Context Plan (SDCP), which identifies the principal physical components of this programme, and by the Strategic Sustainability Appraisal (SSA), which identifies the main environmental and related issues that are likely to arise in the course of implementation of the programme.

As the developments progress, individual environmental studies and statements will be produced and the cumulative impact of the overall programme can be reassessed. However, the overall strategies that have been put into place with regard to construction activities, landscaping and traffic management should enable the environmental impact of the programme to be minimised, whilst enabling significant community and economic benefits from the projects implementation.

As the construction sites of the external schemes (Table 17-2) are up to 1 km apart, it is judged that the combined off-site effect of construction plant operation at the sites should be negligible.

17.4.2.8 Archaeology and Built Heritage

The cumulative impact of both HEFF and NOA on the cultural heritage resource is more significant than consideration of HEFF as a standalone development.

The cumulative impact of the HEFF Application alone is considered to be low as while the development will negatively affect the historic landscape character to a small degree, the proposed development will not have an impact either on a broad range of resource types nor over a large area. However, when considered alongside the NOA development, the cumulative impact of HEFF is greater due to the combined loss of elements of the historic character of AWE Aldermaston, resulting from the demolition of WWII and Cold War built heritage features and layout.

The cumulative impact resulting from the loss of unexpected buried archaeological remains at both HEFF and NOA, is considered to be low, however, this should be considered together with any future loss associated with any further application sites, in order to determine the cumulative impact (or net loss) of cultural heritage at AWE Aldermaston.

17.4.2.9 Ecology

A Framework Plan has been produced which highlights areas of the site where development is proposed and other areas where semi-natural habitats would be retained or created during the period 2005 and 2015. There are a number of new build projects, this is in the context of large scale investment in sustaining key skills and facilities at the AWE. Proposed facilities are detailed in Table 17-1. The cumulative scenario includes the New Office Accommodation, which was granted planning permission in early 2007.

A Biodiversity Strategy for the Atomic Weapons Establishment is being prepared which includes an Ecological Constraints Plan for the site which highlights habitats and species of biodiversity value associated with the site. The strategy identifies actions required to maintain and where possible enhance features of value. The site Framework Plan incorporates a large proportion of the features of biodiversity value that have been identified. The public information leaflet Sites Development Strategy Update 2005 states that: "natural habitats will remain protected as havens for wildlife".

Where there are unavoidable losses, it has been recommended that new habitats are created and/or other existing features are enhanced to compensate. Providing an appropriate level of ecological assessment is carried out for future projects at AWE and the Biodiversity Strategy is implemented it is anticipated that the cumulative impacts of proposed developments across the AWE site are negligible in the medium to long-term.

17.4 Conclusion

The cumulative impacts of the Proposed Development together with other surrounding schemes have been assessed during the construction and operational phases of the project.

By considering the cumulative impact of individual impacts from the Proposed Development, it is considered there will be temporary minor adverse impact interactions during the construction stage in relation to transport and air quality. These impacts are of minor significance and will occur over a short time period.

When considering the combined effects of the Proposed Development with proposals contained within the SDCP and those external schemes listed in Table 17-2, it is considered that the development of HEFF in modern buildings in a landscaped setting will have a positive cumulative impact particularly in relation to Socio-Economics, as well as providing benefits for biodiversity across the site. In addition, continued development will result in a clean up of any contamination on site, leading to beneficial impact to ground conditions and to groundwater.

References

Ref. 17-1 EC Directive 85/337/EEC, (1985); 'Council Directive on the Assessment of the Effects of Certain Public and Private Projects on the Environment.'

Ref. 17-2 EC Directive 97/11/EC, (1997); 'Amending Directive 85/337/EEC on the Assessment of the Effects of Certain Public and Private Projects on the Environment.'

Ref. 17-3 HMSO, (1999); Town and Country (Environmental Impact Assessment) (England and Wales) Regulations 1999 (SI 1999/293).

Ref. 17-4 AWE (2005) AWE Aldermaston & Burghfield: Site Development Context Plan 2005-2015.