Our Ref: 03.PC0249
Your Ref: Atlantic Aviation Group

An Bord Pleanála

Ciara McDonagh
O'Neill O'Malley Ltd.,
2nd Floor, Technology House,
Galway Technology Park,
Parkmore,
Galway.

29th August 2017

Re:
Proposed extension to the external car park ancillary to the AAG Hangar facility at Shannon Industrial Estate, Shannon free zone, Shannon, Co. Clare.

Dear Madam,

An Bord Pleanála has received your submission dated 10th August, 2017 in relation to the above mentioned proposed development.

Yours faithfully,

Muiriosa Cassells
Executive Officer
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O'Neill | O'Malley

Architecture + Project Management

The Secretary
An Bord Pleanala
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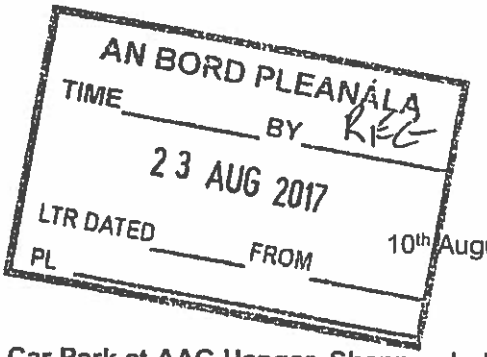

Our Ref: 17133/3.09

10th August 2017

Re: Proposed extension to Car Park at AAG Hangar, Shannon Industrial Estate, Shannon Free Zone, Shannon, Co.Clare.

Dear Sir/ Madam,

Following our request for a pre-application consultation in relation to the above development and in response to your letter dated 9th August 2017, please see below information / clarification as requested.

1. Please find attached a revised Indra ILS Assessment showing proposed works for the purposes of this application. The proposed development works for the purposes of this application are defined as follows:

   'Relocation of the South West boundary adjoining Shannon Airport to provide a 1,719 sqm extension to the external carpark area with 87 no. additional car parking spaces, external lighting and all associated siteworks and services.'

2. Atlantic Aviation Group (AAG) provide a number of services including Aircraft Maintenance, Technical Services, Design Services and Training Solutions for the Aviation Industry. Due to an increase in demand, AAG intend to expand their aircraft maintenance services from two operation lines to three within the existing Hangar building. As the external car park is currently at full capacity, it is proposed that the additional employees required for this growth will also require car parking accommodation on site.

3. The existing and proposed car park areas will be for the sole private use of AAG, their employees and visitors and will be operated and maintained by AAG. Due to an increase in demand for the services provided by AAG and following an internal study of projected employee numbers, the workforce at AAG is due to expand significantly. This additional car parking is proposed on site to provide access and accommodation for both current and future employees.

4. It is our opinion that the proposed works does **not** meet any of the criteria of Section 37(A)2 of the Planning and Development Act 2000 (as amended). Points a-c of Section 37(A) 2 of the Act are addressed as follows:

   a. *the development would be of strategic economic or social importance to the State or the region in which it would be situate,*

Directors:

John O'Neill MRIAI BSc Dip Arch Tech P Grad Dip Pro Mgt Conserv Arch G3

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i. It is our opinion that the proposed works are minor in nature, contributing only to the private operation of the AAG facility and would not be of strategic, economic or social importance to the State or the region in which it would be situate.

b. *the development would contribute substantially to the fulfilment of any of the objectives in the National Spatial Strategy or in any regional planning guidelines in force in respect of the area or areas in which it would be situate,*

i. It is our opinion that the proposed works are minor in nature, contributing only to the private operation of the AAG facility and would not contribute substantially to the fulfilment of any of the objectives in the National Spatial Strategy or in any regional planning guidelines in force in respect of the area or areas in which it would be situate.

c. *the development would have a significant effect on the area of more than one planning authority.*

i. The site is located within the Shannon Industrial Estate at Shannon, Co. Clare within the functional area and Planning Authority of Clare County Council. Due to the minor nature of the works, it is our understanding that the proposed works will have no significant effect on the area.

We trust that the above request is in order, however if you have any comments or questions please don't hesitate to contact us.

Regards,

Ciara McDonagh

MRIAI

For O'Neill - O'Malley Ltd.

Directors:

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NORMARC ILS

ILS ASSESSMENT ON PROPOSED EXTENSION TO CAR PARK

Shannon Airport

SSR-17027-Rev.1.0/18-Aug-2017

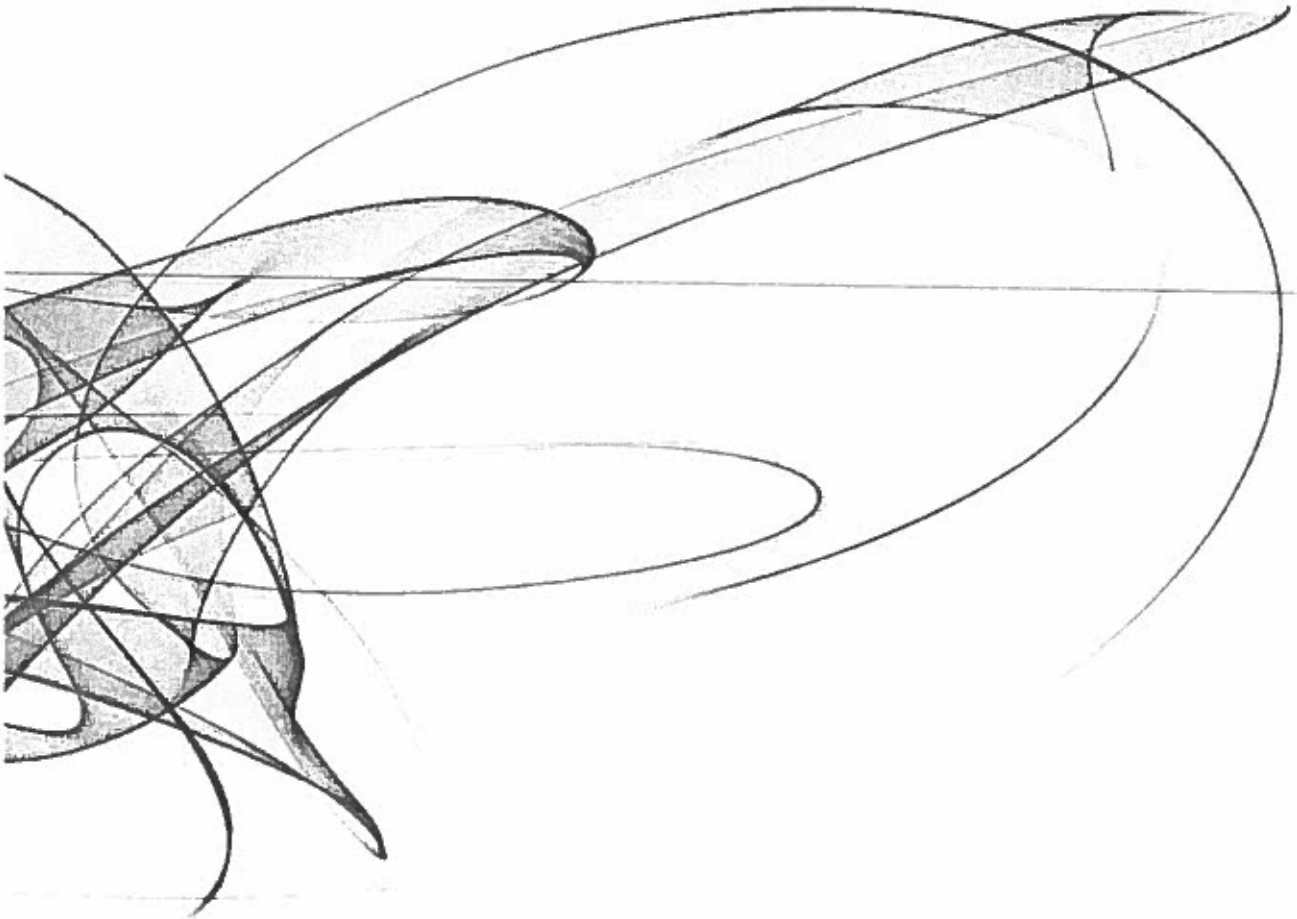

Table of Contents

Document Revisions and Changes Incorporated in this Document

Issue:	Paragraph:	Paragraph Heading/Description of Change:
1.0		First issue

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1 General

O'Neill - O'Malley Ltd have requested Indra Navia AS to do an analysis on how the proposed extension to the car park south west of AAG Hangar will affect the Instrument Landing System (ILS) signals at Shannon Airport. The work does not include any other external work at the existing AAG hangar site.

The operational ILS category at Shannon airport is CAT III. The relevant runway and Localizer characteristics are listed in Table 1-1.

Parameter	Value
RWY Length	3 050 m
RWY With	45 m
LOC 06 Setback distance	470 m
LOC 24 Setback distance	304 m

Table 1-1: Relevant runway and Localizer characteristics

1.1 Location of proposed extension to car park

Figure 1 shows an overview map picture of Shannon Airport with an indication of the area of where the proposed extension to the car park is. The arrows show the directions to this area, seen from the two Localizers.

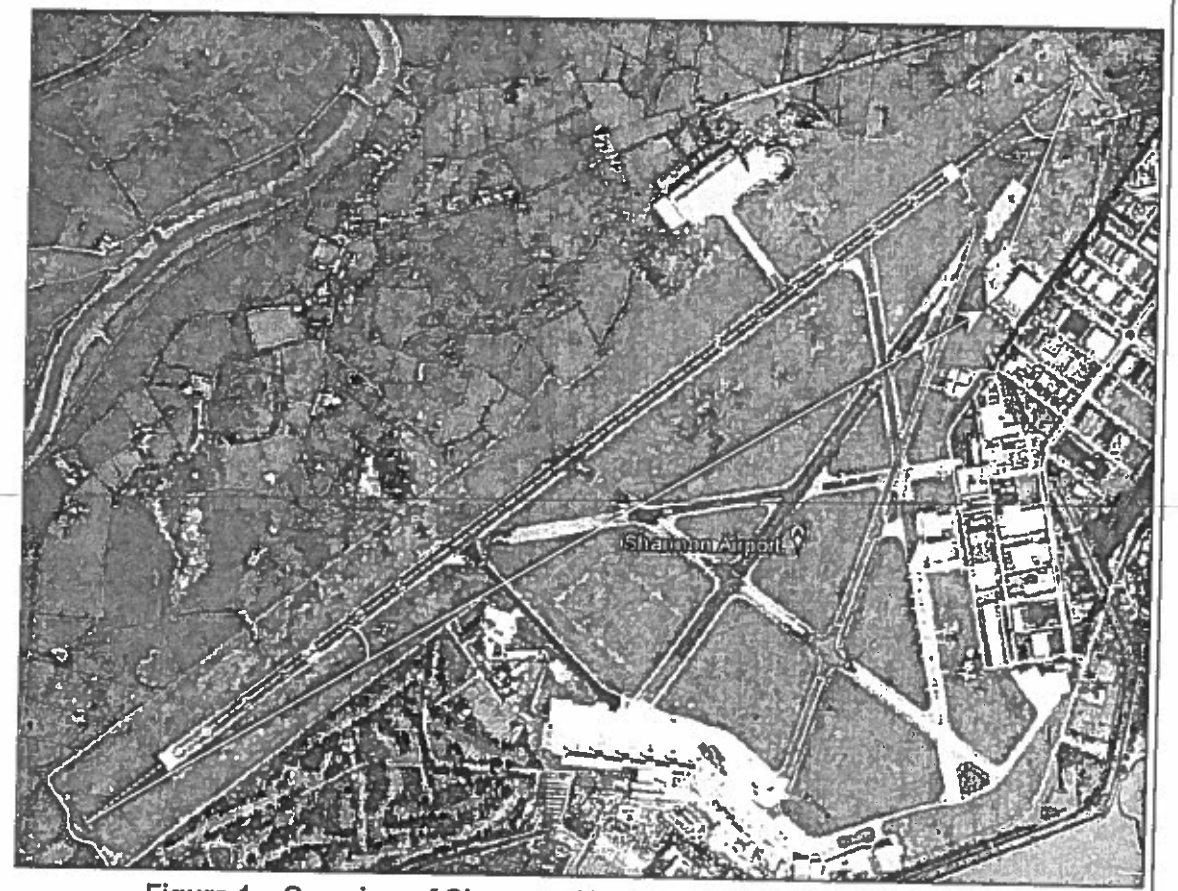

Figure 1 – Overview of Shannon Airport with indication of the area for the proposed extension to car park

2 Executive Summary

The simulations showed no performance (DDM) distortions, with the new proposed extension to the car park, for both ILS 06 and 24.

The ILS signal performance is expected to remain inside ICAO CAT III standard for both runway 06 and 24.

3 Analysis

3.1 Simulation tools

The software used in the simulation analysis is ATOLL from ENAC.

3.2 Limitations of the analysis

The analysis has been done for ILS only. Other navaids were not considered. Due to the location, the proposed extension to car park will have no effect on the ILS Glide Path signals. Hence, the analysis was aimed at the ILS Localizes only. The purpose of the analysis was to investigate to which extent the proposed extension to car park will influence on the Localizer signals.

The analysis considered the constructions according to the description provided and the proposal drawing provided. If any of the constructions are changed with respect to location, size, orientation or material, the influence on the Localizer signals may be different.

3.3 Description of proposed extension to car park

Figure 2 shows a drawing of the proposed extension to the existing car park southwest of the existing AAG hanger; shown with blue dotted lines.

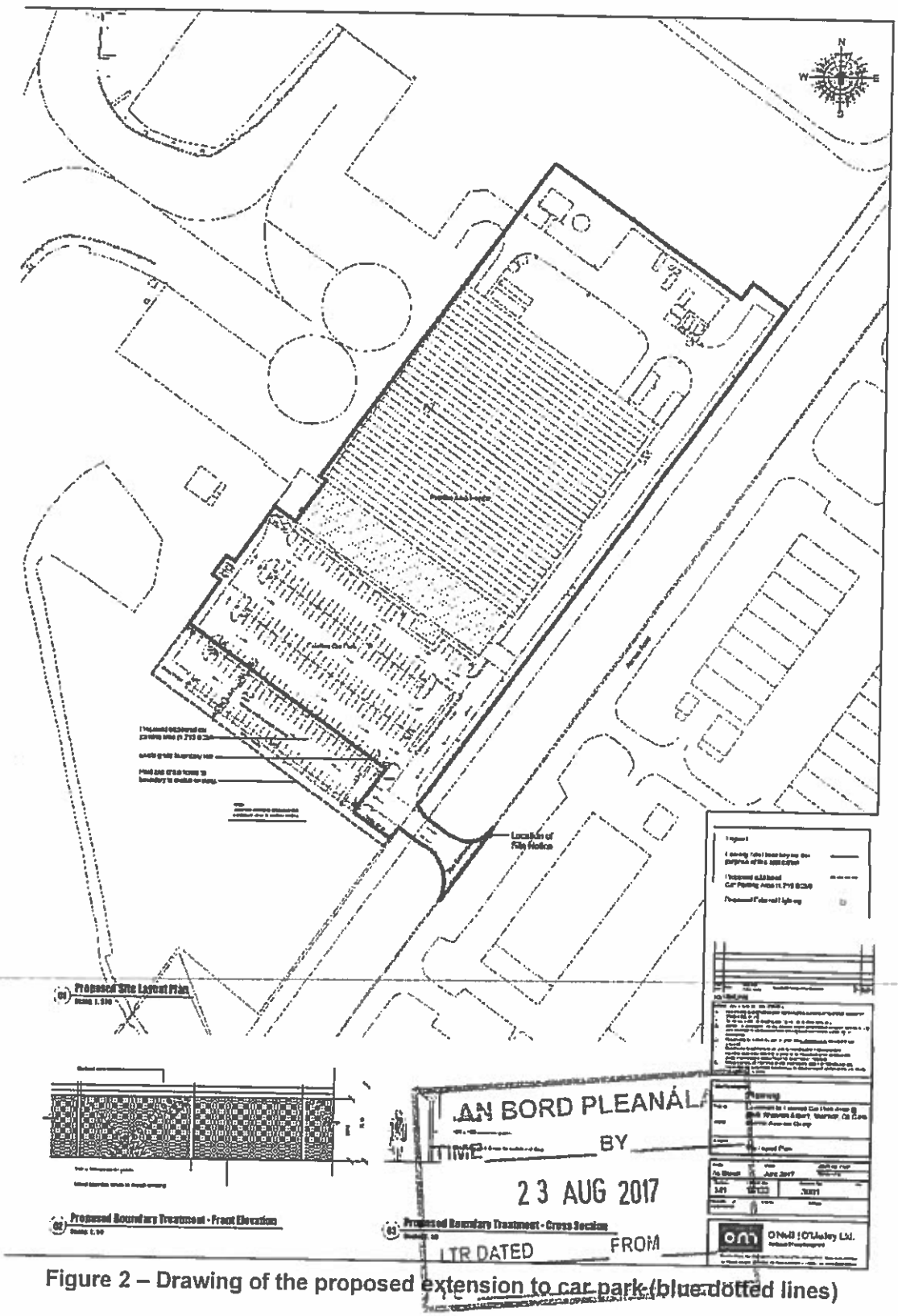

Figure 2 – Drawing of the proposed extension to car park (blue dotted lines)

3.4 Localizer RWY 06

3.4.1 Antenna system Localizer 06

The Localizer Antenna System used during the simulations for RWY 06 was NORMARC 16-element dual frequency (NM 3526).

3.4.2 DDM distortion due to the proposed extension to car park for Localizer 06

Seen from Localizer 06, the proposed extension to car park is at approximately 32° azimuth. Figure 3 shows a simulated approach with the DDM distortion due to the new construction as described in chapter 3.3. CAT III limits are shown. Figure 4 shows a simulated orbit flight.

Figure 5 shows the Course and Clearance signal patterns, and Figure 6 shows the Beam Bend Potential (BBP) for the NM 3526 currently installed for runway 06 at Shannon Airport.

3.4.3 Conclusion for Localizer 06

The simulations showed practically no DDM distortions, with the new proposed construction. According to the simulations, the proposed extension to car park will not degrade the signal for Localizer 06.

Aircraft on approach will not see any effect in the received Localizer signal due to the proposed construction.

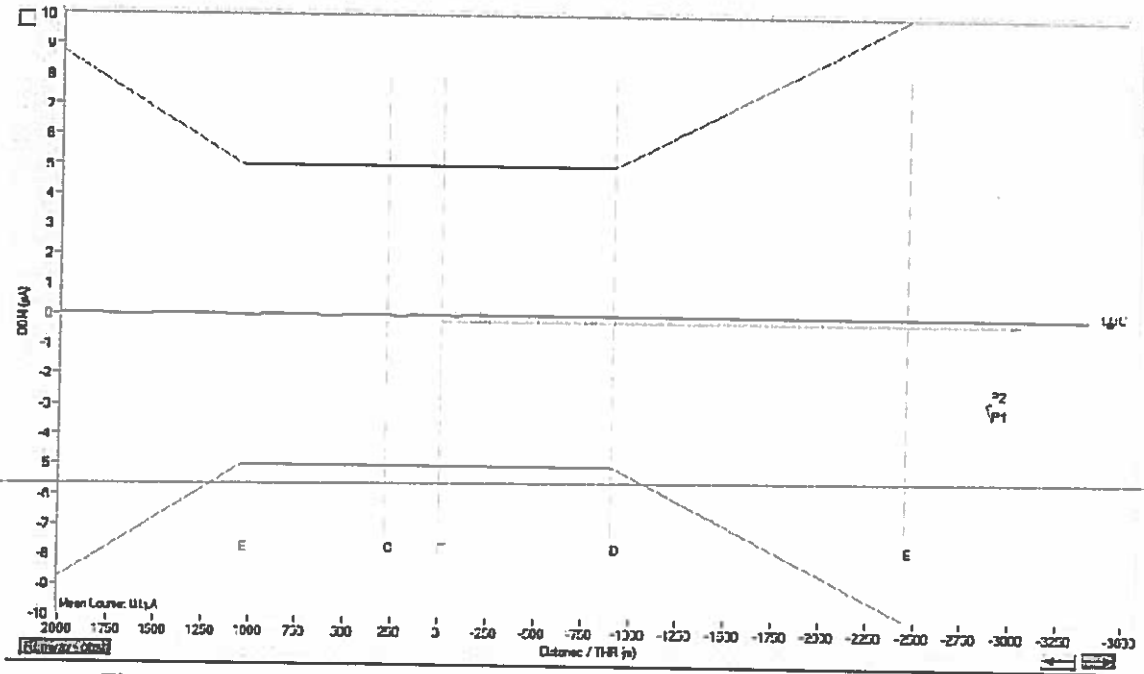

Figure 3 – Simulated Approach with DDM distortion due to the proposed extension to car park for LOC 06 (NM 3526)

ILS ASSESSMENT ON PROPOSED EXTENSION TO CAR PARK

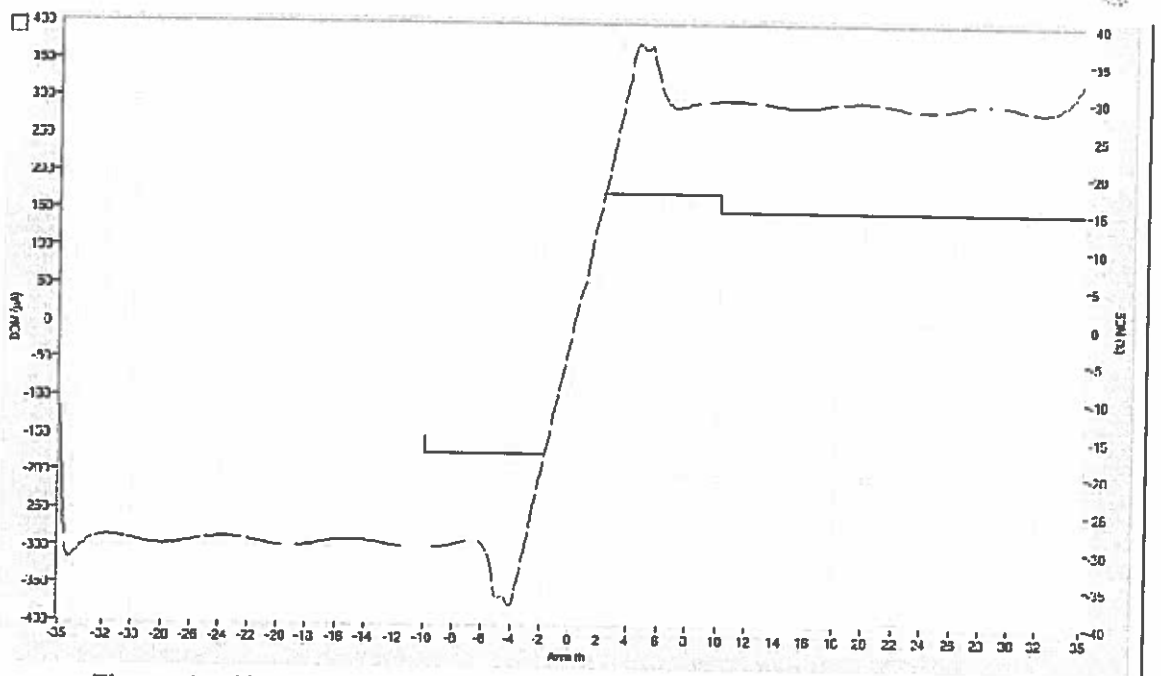

Figure 4 – Simulated Orbit flight with the proposed extension to car park for LOC 06 (NM 3526)

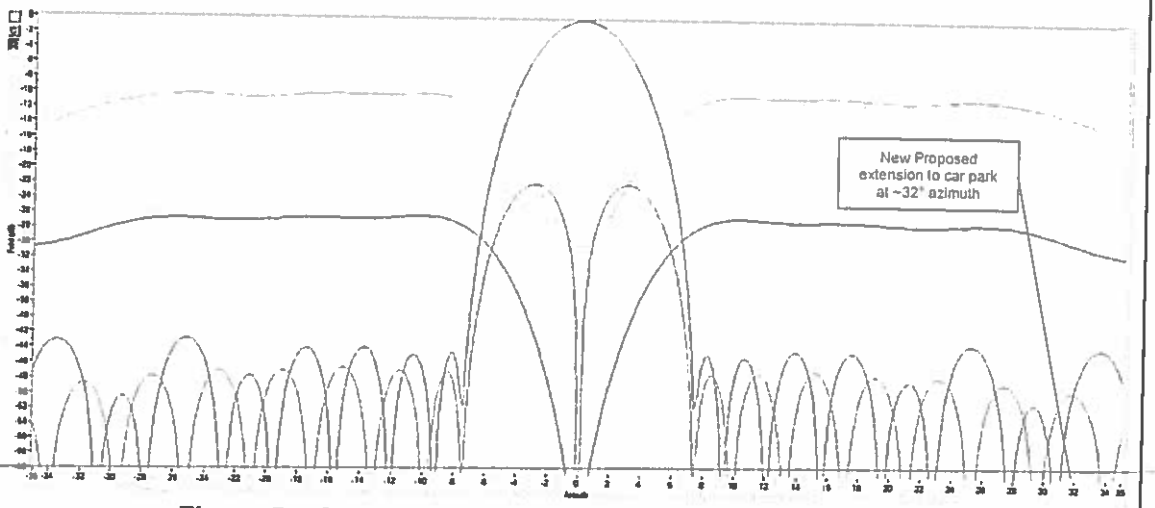

Figure 5 – Course/Clearance patterns for LOC 06 (NM 3526)

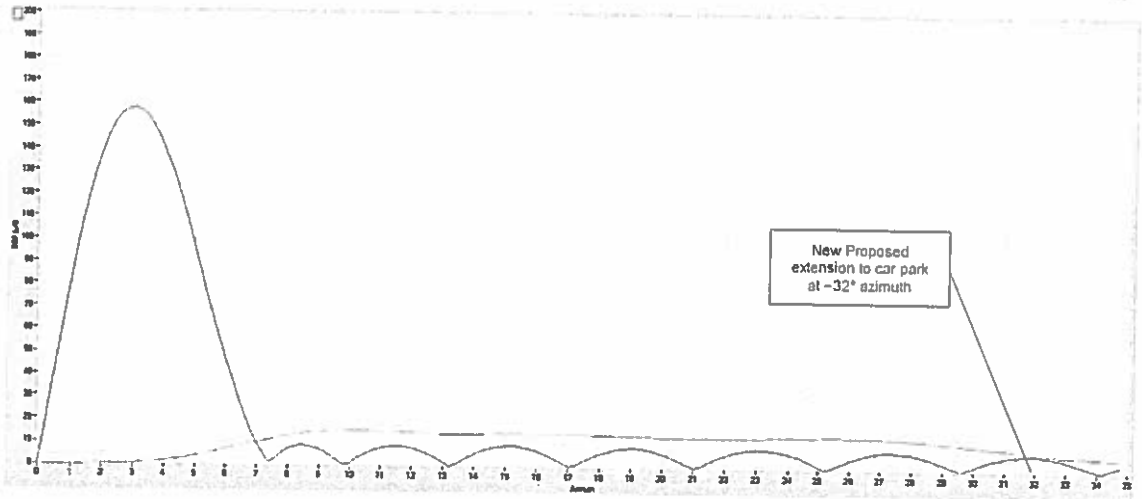

Figure 6 – BBP for LOC 06 (NM 3526)

3.5 Localizer RWY 24

3.5.1 Antenna system Localizer 24

The Localizer Antenna System used during the simulations for RWY 24 was NORMARC 24-element dual frequency (NM 3525).

3.5.2 DDM distortion due to the proposed extension to car park for Localizer 24

Seen from Localizer 24, the proposed extension to car park is at approximately 7° azimuth. Figure 7 shows a simulated approach with the DDM distortion due to the new construction as described in chapter 3.3. CAT III limits are shown. Figure 8 shows a simulated orbit flight.

Figure 9 shows the Course and Clearance signal patterns, and Figure 10 shows the Beam Bend Potential (BBP) for the NM 3525 currently installed for runway 24 at Shannon Airport.

3.5.3 Conclusion for Localizer 24

The simulations showed no DDM distortions due to the proposed construction. According to the simulations, the proposed extension to car park will have no influence on the signal from Localizer 24.

Aircraft on approach will not see any effect in the received Localizer signal due to the proposed construction.

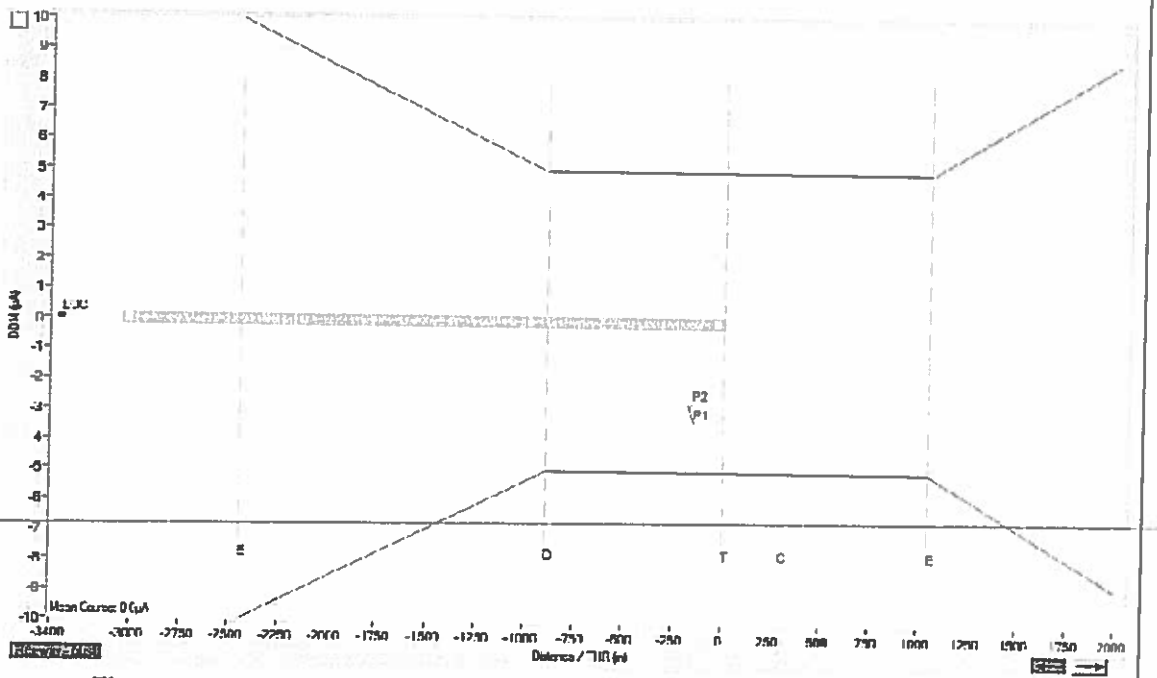

Figure 7 – Simulated Approach with DDM distortion due to the proposed extension to car park for LOC 24 (NM 3525)

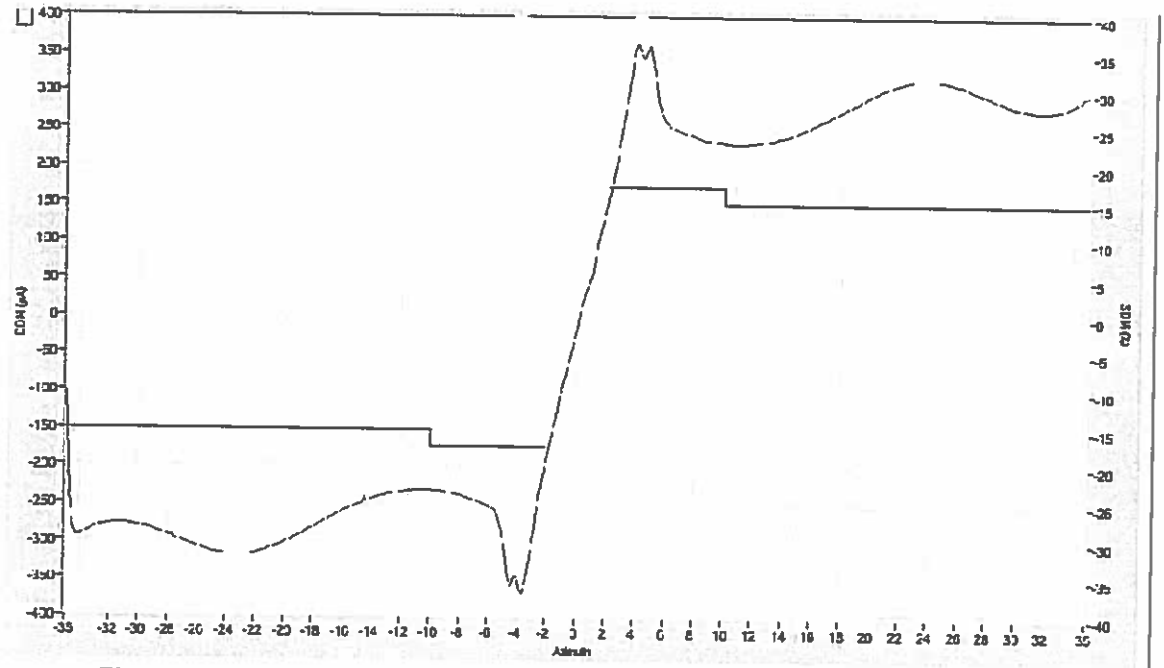

Figure 8 – Simulated Orbit flight with the proposed extension to car park for LOC 24 (NM 3525)

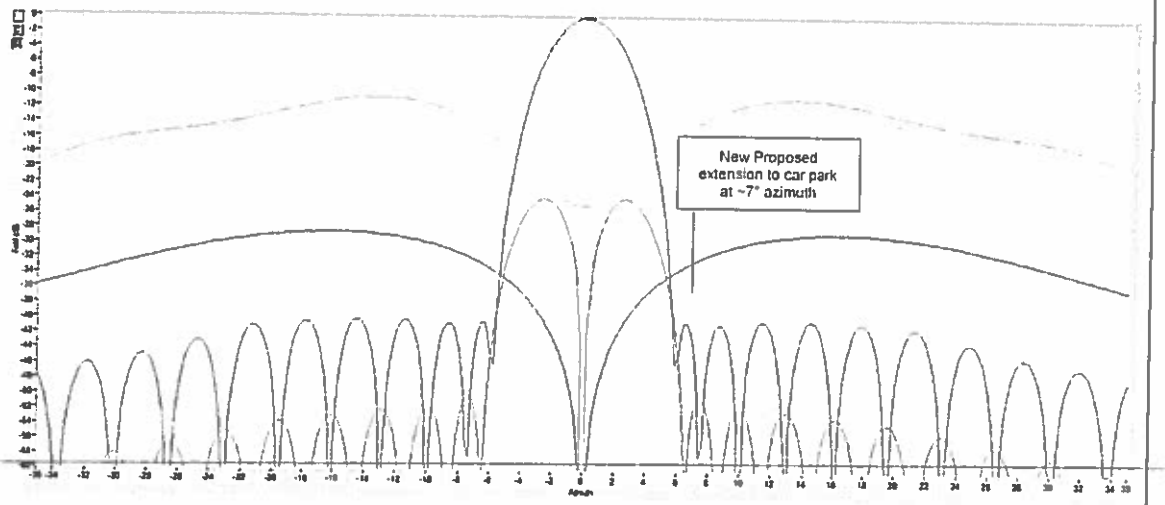

Figure 9 – Course/Clearance patterns for LOC 24 (NM 3525)

ILS ASSESSMENT ON PROPOSED EXTENSION TO CAR PARK

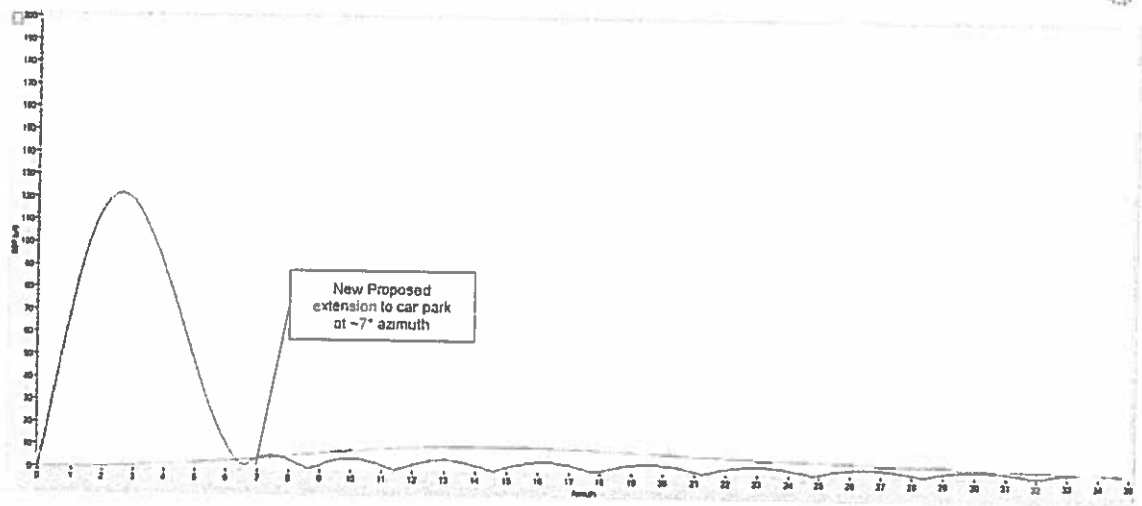

Figure 10 – BBP for LOC 24 (NM 3525)

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